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Test Centre digit OCTOBER 2001

33 Branded Desktop PCs

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# Trading Freedom for Safety



"Government agencies are taking advantage of insecurity being felt in the US to introduce legislation that will allow monitoring of communication"

Without doubt the most significant 'event' over the last month was the attack by terrorists on the World Trade Centre and the Pentagon. Their belief is that execution of the act was made possible by the use of encrypted communication technology.

Quite predictably, the initial reaction seems to be that similar events can be avoided in the future by monitoring all communications with the help of backdoors in all encryption software. There is a new legislation being suggested in the US that will allow law enforcement agencies to do just this.

This serves no real purpose because even though the US has disallowed the export of powerful encryption schemes, people outside have access to far more powerful and unknown encryption schemes. The new Bill that seeks support to add backdoors to encryption software will be limited to software developed only in the US. Any individual who wants to communicate in secret will not use a back-doored encryption scheme controlled by the US government when he can choose from several 1024-bit encryption schemes that aren't in the control of the US government.

Government agencies in most developed countries are used to being in control of the flow of technology to people. However, due to the presence of a new economic structure which fuelled research and development in areas that were beyond the direct control of the government, this is no longer a reality. The power to choose what technology reaches people has now passed on into the hands of people in different parts of the world.

This is something that the security agencies aren't particularly comfortable with.

Privacy activists insist that government agencies are taking advantage of the insecurity being felt by people in the US to introduce legislation that will allow them to monitor all communication. This would be accomplished by installing software called Carnivore on the ISPs' servers, which would allow the monitoring of all kinds of communication, including personal e-mail. This is of concern not only to US citizens, but also to anyone who is using a US-based e-mail service.

It remains to be seen whether the legislation will be effective in preventing the occurrence of similar incidences in the future. However, this would eventually result in less freedom and violates the right to privacy that each of us feels we are entitled to on the Internet.

Is this a price worth paying?



Karan Manral
Assistant Editor
karan_manral@jasubhai.com

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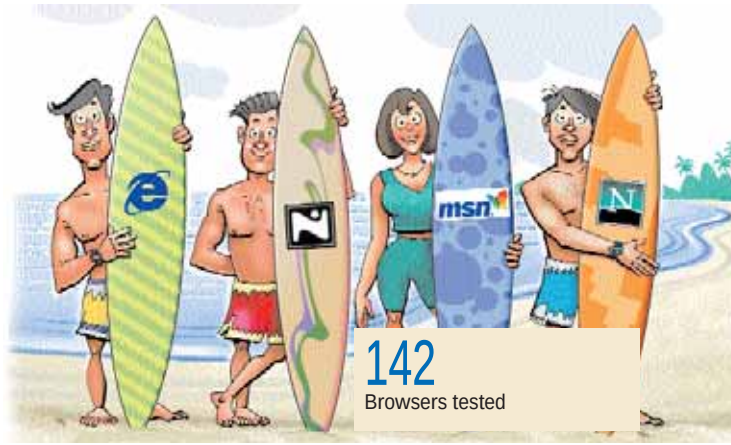
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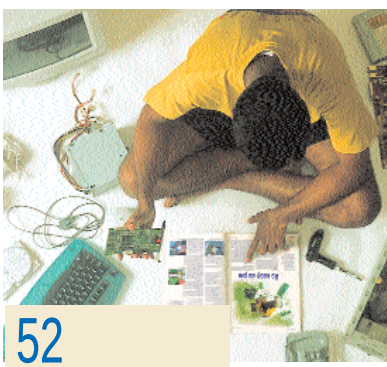
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## digit interactive

## ON THE CD

# Mindware

## RESOLVE
### TROUBLESHOOTING
More FAQs on Linux

### WORKSHOP
Hands-on: Get to know your PCs back panel in this video workshop

## E-PAPERS
Working with PDFs and eBooks

## SOFTWARE
### DEVELOPERS
**CRIMSON EDITOR 3.21**
A professional source editor for Windows with powerful features for HTML, C/C++, Java, Matlab, LaTex

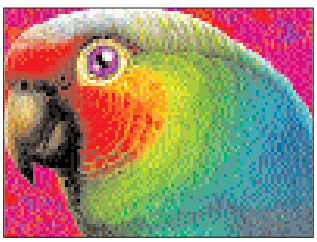
**DJ JAVA DECOMPILER 2.8.8.54**
A Win 95/98/NT/ME/2000 decompiler and disassembler for Java and full-featured Java editor

### GRAPHICS
**IMAGE CONVERTER PLUS 5.2**
A set of tools with four mutually integrated programs for viewing, processing and printing graphic files




**HYPERSNAP DX 4.10.02**
This screen capture tool for Windows can capture screens from desktop programs, DVD players, DirectX/Direct3D, 3dfx Voodoo and Glide mode games and a lot more

**POLYVIEW 3.61**
A graphics utility with features such as image acquisition from TWAIN scanners,



creation and playback of animated GIFs and a number of filtering options

### HOME
**PAPERQUOTE'01**
Add some inspirational quotes of your choice to your wallpaper with this software

## Software on CD

**Mindware**

**DEVELOPERS**
Microsoft Visual Basic Control Creation Edition 5.0 (Demo)

**GRAPHICS**
ImagePro 2K1 v1.0 (Shareware), PolyView 3.61 (Shareware)

**HOME**
Recipe Calc 4.0 (Freeware), Express NewsPictures 1.1 (Shareware), eCollector 2.3 (Demo)

**IN MAGAZINE**
Gimp 1.2 for Windows (Freeware), K-Meleon v0.4 (Freeware), NeoPlanet v5.2 (Adware), Netscape Communicator 4.78 (Freeware), NetCaptor Beta 9 v6.5.0 (Freeware), Opera Bundled with JRE 1.3 v5.12 (Freeware)

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**INTERNET**
CuteFTP (32-bit) (Demo), ePrompter(SR7) (Freeware), Limewire (Freeware), MailScan for Mail Servers (Generic) (Demo), Webkall Internet Phone (32-bit) (Freeware)

**OFFICE**
AllNetic Working Time Tracker(Freeware), Account Pro (32-bit) 7.69h (Shareware), The Retail Solution (Demo), The Little Economist (Shareware)

**RESOURCES**
Cacheman 5.0 (Shareware), Global DivX Player 1.9.0 (Freeware), Pop-up Stopper (Shareware), WinRAR (Shareware), Windows Media Player 7.1 (Freeware), Winzip (Evaluation)

**UPDATES**
GoZilla Free (Freeware), ICQ 2000b 4.65 build #3281 (Freeware), NeoTrace Express (Freeware), Microsoft Patch for Code Red Virus (Freeware), Windows 2000 Compatibility Updates (Freeware)

**UTILITIES**
AX-Icons 4.5 (Shareware), Quintessential Player 3.22 (Freeware), Trillian 0.6351 (Freeware)

**Playware**

**ARENA**
Sheep, Dog n' Wolf Demo (Puzzle/adventure), Rally Championship Xtreme (Racing), Counter-Strike (Action), Aliens vs Predator 2 (Action), Bejeweled (a.k.a. Diamond Mine) (Puzzle), LightWeight Ninja Demo (Side scroller), Bowling Mania (Arcade), Zelda Classic (Arcade)

**GALLERY**
Wallpapers, Screensavers, Skins and Themes

**AUDIOGRABBER 1.80 BUILD 4**
Make high quality copies of your favourite music from CDs by the digital method




**PCS HOMETRACK**
This application lets you track a complete inventory of your possessions

## INTERNET

**AI ROBOFORM V 3.9.82**
This free utility adds form-filler hot buttons to Internet Explorer 4 or Netscape 6 and automatically fills up forms

## IN MAGAZINE

**MICROSOFT IE V6.0**
This version of IE sports enhanced features such as an integrated advanced search bar and an image tool bar

**NETSCAPE 6.1**
This latest update includes features such as quick launch, integrated download manager, improved e-mail management and much more

## OFFICE

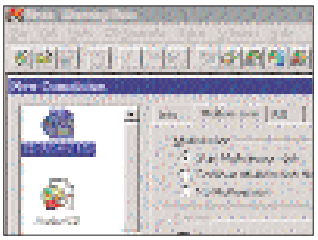
**MESSAGEASAP (SE) 4.2.1**
Upload your fax and voice messages to your e-mail accounts and even check your messages by the phone or Net



**REDBOX ORGANISER 4.0**
A multifeatured PIM that also comes with a Web publishing wizard for exporting data in HTML format

## UPDATES

**NERO BURNING ROM 5.5.4.0**
This application lets you write to both CD-R and CD-RWs and supports on-the-fly disc recording and overburning



## UTILITIES

**SYSTEM ANALYSER 5.21**
Get extensive information about your PC such as BIOS, memory, CD-ROM, IEEE 1284 (parallel port), SCSI

**SISOFT SANDRA 2001 TE (5.8.11)**
A set of system diagnostic and benchmarking tools that help you keep your computer running at peak performance

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Reviews of tested products

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PC component prices

### POINTERS AND FILE OPERATIONS IN C
Tutorial for end-users

*Complete, free course from*
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Whitepapers on clustering

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Tips and Tricks database

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## Playware

### GALLERY
Wallpapers, themes and Winamp skins

## ARENA

### GAMES

**ALIENS VS PREDATORS 2**
Get into the boots of an alien, a predator or a marine and play until only one of you emerges victorious

**ZELDA CLASSIC**
This game allows you to develop new quests, new enemies, items and challenges



## SURGE
Groove to the tunes of Alien Abducty, DJ-MARTZ, M-Rax and feast your eyes on the latest trailers

## CONNECT

### SITEMAP
Get into the cramming mode with E-Pariksha.com

### INDIA SITES
New Indian sites and ISP news

### BOOKMARKS
Archie, Tintin and Garfield in the world of online comics




### NEWSLETTERS
Tantalise your brain cells with these scientific newsletters

### DROOLMAAL
If looks could kill, this page would burn!



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**Chairman and Publisher** Jasu Shah
**Associate Publisher and Editor** Maulik Jasubhai
**Assistant Editor** Karan Manral

**Editorial**
**Writers** Anil Patrick R., Vidyaramanan S., Sriram Sharma, Avina Lobo, Prashant Masrani
**Features Editor** Sveta Basraon
**Copy Editors** Anshul Chauhan, Julian Vongeyer, Roopa Sukumaran
**Thinkdigit.com** Aalaap Ghag, Sunil Srinivasan

**Design**
**Consultant** G.V. Sreekumar
**Art Director** Marshall Mascarenhas
**Visualisers** V. Jeevanand, Shyam Shirsekar
**Senior Designer** Shivasankaran C. Pillai,
**Graphics** Solomon Lewis, Jaya Shetty
**Digital Imaging Artist** Neeta Wadiker
**Photographers** Ashesh Shah, Rahul Sharma, Mexi Xavier
**Illustrator** Mahesh Benkar, Ram
**Contributing Illustrator** Farzana Cooper

**Test Centre**
**Head** Marco D'Souza
**Deputy Head** Hatim Kantawalla
**Reviewers** Dipayan Choudhury, Aliasgar Pardawala, Menlyn Noronha, Yatish Suvarna, Mitul Mehta
**Co-ordinator** Gautami V. Chalke

**Multimedia**
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**Designer** Kabir Malkani, Jo-Ann Rodricks,Priyamvada K.K.
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Send a complete working copy of the product (not a 'trial' or 'demo' version) to the Digit Test Centre. Only products that are currently available in the Indian market will be considered. The products must have the complete name of the manufacturer or developer, details regarding the name of the model and its type and the end-user price. Product brochure and a complete specification sheet must be included, along with the name of a person to be contacted for information.

DIGIT INTERACTIVE

Contact Vaibhav Kapoor, Content Co-ordinator, Multimedia *(cdcontent@jasubhai.com)* for inclusion of software on Digit Interactive. A write-up detailing the features of the software, complete loading instructions and a letter certifying that the product is original must accompany the software. The software must also have the complete address, telephone number and e-mail of the developer.

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Sales & Client Marketing
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Ad Sales Support

NEW DELHI
**Vijay Adhikari**
Regional Manager
**Koshy Thomas**
Ad Sales Manager
**Arvind Prabhakar**
**Rahul Bhardwaj**
Phone: +91 11 6445320-25
Fax: +91 11 6445321

BANGALORE
**S. Saikumar**
Ad Sales Manager
**Raghu Pillai**
**Kiran Karri**
Phone: +91 80 5325670/88, 2899287
Tele-Fax: +91 80 5098717

MUMBAI
**Rupesh Sreedharan**
Ad Sales Manager
**Bhavesh Thakore**
**Clayton Brace**
Phone: +91 22 6591849-50, 6591651
Fax: +91 22 6591592

SECUNDERABAD
**Venu**
Phone: + 91 40 6329190/6329181

CHENNAI
**Sahayaraj Prabhu**
Phone: +91 44 8235186-89
Fax: +91 44 8230731

PUNE
**Sanjay Nepali**
Phone: +91 20 4482059, 4494572
Tele-Fax: +91 20 4482059

CALCUTTA
**Jayanta Bhattacharya**
Phone: +91 33 2822183, 2827842, 2828016
Fax: +91 33 2827673

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**HEAD OFFICE:**
**EDITORIAL, MARKETING AND CUSTOMER SERVICE**
Plot No D-222/2,
TTC Industrial Area, MIDC, Shirvane,
Nerul, Navi Mumbai 400 706
**Phone:** 022-7629191/9200
**Fax:** 022-7615225, 7629223/24
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## hypethesis

### Quantum Teleportation

**▲ What is it?**

Teleportation is defined as the process of transferring an object or a person from one place to another through mass-energy-mass conversion. The original object or person will be scanned for all details and the data will be sent to the destination where the object or the person is to be recreated. At the destination the object will be recreated not with the actual material but with atoms of a similar material.

**▲ What's special about the project?**

Scientists have found a way to scan a part of the information of the object to be teleported, while carrying the remaining unscanned information to pass through another object. Then the latter object through which the unscanned information is passed through is manoeuvered into exactly the same state as the first object was in before it was scanned. Teleportation takes place and not replication; this is what the scientists claim on the basis of EPR. Thus, it helps you retain your privacy.

**▲ Where can you get it?**

http://research.ibm.com

**SNAPSHOT**

**10 Million**

Networked homes in the US by 2003

The number of people around the world having Internet access by 2002

**90 million**

***Source:*** *www.Internetindicators.com*

## Games delayed due to WTC attacks




The terrorist attacks on America that destroyed the World Trade Center in New York have caused consternation amongst the game development community. Many publishers have decided to either delay or put off the release of some of their upcoming titles indefinitely.

Electronic Arts is redesigning packs for its *Command & Conquer* series that featured the New York skyline. Activision has announced a delay in the release of a new Spider-Man title. Ubisoft and Konami have indefinitely postponed upcoming *Rogue Spear* *and Metal Gear* version. Microsoft also intends to remove the World Trade Center from scenes in *Flight Simulator 2002*.

HP-COMPAQ

## Merger or Submerger?

Analysts have nothing positive to say about this merger, which has been likened to a shotgun wedding, a survival merger, and a desperate move.

Investors do not like the idea at all, and the stocks of the two personal computer makers have plummeted since the deal was announced on September 3.

For those who cued in late, Hewlett-Packard will be acquiring Compaq Computer, the No. 2 PC maker, in a stock-swap deal valued at $25 billion. The merger is the biggest deal among PC makers since Compaq bought Digital for $9.6 billion in 1998. Both companies have suffered due to the tech slowdown with plummeting profits and job cuts. They both have also suffered dearly trying to duel Dell in the direct market.

## India's first cyber-crime police station

India's first exclusive Cyber Crime Police Station (CCPS) has been launched to deal with problems like computer hacking, data damage and Internet fraud. The station, which would only cover the state of Karnataka, was launched on September 15. It would deal with crimes which were covered under the Information Technology Act that was brought into effect last year.



**Illustrations:** Farzana Cooper

Karnataka, like several other states had set up a special cell in 1999 with advice from experts from leading Bangalore-based software firms. This cell has now been given the status of a police station and aims to take quick decisive action on solving cybercrimes.

## Chat on Yahoo! Messenger with SMS




Have you ever wished that you could use your Internet messaging service via your cell phone? The popularity of Internet messaging and SMS messaging on cell phones has led Yahoo! India and Orange to come together and offer mobile phone users the ability to use the Yahoo! Messenger service via SMS.

You can log into your Yahoo! Messenger account by typing your username and password and sending it via an SMS message to 8242 (in Mumbai). You will get an SMS message confirming your status. Almost all messenger functionality will be available on the cell phone, which is really neat, although the usability could do with some improvements. This service is already available to all Orange and Hutichison affiliates sans sign ups or registration of any kind.

◆ Microsoft XP trial version released in a fully functional Corporate Edition ◆ Sony unveils new robo-pups to play with Aibo◆

# HomeStation: The XBox Alternative

There's a new alternative for XBox on the anvil, if unofficial sources are to be believed. Some sources have claimed that Microsoft is putting the finishing touches on its next home entertainment product: a more multimedia, less games-oriented alternative to XBox.

This XBox alternative/successor, will be based on nVidia's nForce chipset and Intel's Pentium 4 processor. Tentatively dubbed the HomeStation, it would serve as a home entertainment hub pulling in content from the Internet, DVD and TV. The box is also said to incorporate the ability to record regular TV programming.

Initially similar functionality was planned for the XBox, but it looks like Microsoft may have decided to incorporate them into a second machine. The company is said to be waiting for a much wider availability of broadband connections before releasing the new system.

## quicktake

# Can FreeMarkets save you money?

**▲ What's FreeMarkets?**

FreeMarkets is the leading global sourcing market and provider of e-sourcing software and service solutions. Through its unique combination of Web-based software, supply market information, market operations and sourcing services, FreeMarkets has helped customers around the world source more than $21 billion in goods and services in more than 185 different supply verticals. FreeMarkets works with over 120 of the world's largest buyers from its 17 offices in 13 countries and over 14,000 suppliers from 70 countries have actively participated in the marketplace.



Amit Bhatia
VP & GM
FreeMarkets India

**▲ How will a user benefit from FreeMarkets?**

FreeMarkets delivers cost savings to its customers (buyers) who e-source with us. Till date, we have delivered over $4 billion in cost savings to our customers.

Our customers save 5-25 per cent on purchase contracts while typically achieving an ROI of 500 per cent in the first year itself! This is facilitated by our five-step Market-Making process, which is designed to help you identify, execute and realise real and tangible cost-savings.

**▲ What is your USP?**

FreeMarkets' USP remains its ability to offer a 'high ROI' in a short period of time without the pain of implementing long-gestation technology solutions.

**▲ What about the Indian market?**

1,500 Indian suppliers are registered with us and active in our global sourcing market, and we have delivered over $4 billion in cost savings to our customers.

# Redalert

## W32.Nimda.A@mm

**Mail@admin all**

Known as 'Nimda', which spells admin backwards, this mass mailing worm has been spreading like wildfire across the Internet.

W32.Nimda.A@mm is a new worm that uses several different methods to spread and infects systems running Microsoft Windows 95, 98, Me, NT and 2000. The worm can come to you via e-mail, or through an open network share. It also attempts to copy itself to vulnerable Microsoft IIS web servers and infects both local and shared network files. The fact that Nimda attacks using a combination of methods and affects both PCs and servers makes it pretty unique. You can avoid being infected by disabling Java script on your machine and avoiding opening any unfamiliar e-mails.

Microsoft has made a patch available for IE 5.xx users which can be downloaded from http://www.microsoft.com/technet/security/bulletin/ms00-078.asp

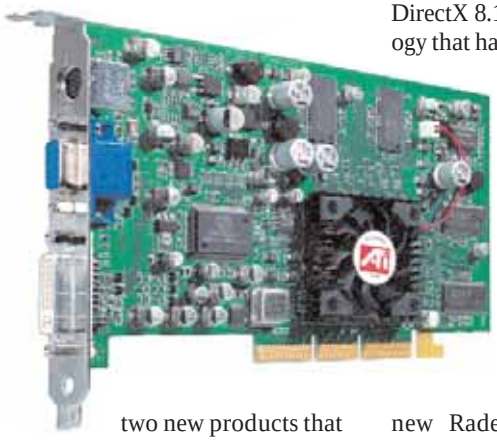
## W32.Magistr.39921@mm

**Lethal weapon**

A variant of W32.Magistr.24876@mm, it overwrites Ntldr.exe and Win.com on all drives with code that causes it to store garbage data in the first sector of the first IDE hard drive. The virus/worm uses e-mail addresses from the Windows and Eudora Address Book files, Outlook Express Sent Items folder, and Netscape Sent Items files. The payload is lethal—it overwrites hard drives, erases CMOS, flashes the BIOS. The e-mail comes with randomly generated text and randomly named infected executables or document files. To remove this worm, use an updated antivirus software and delete all files that are detected as W32.Magistr.39921@mm. If necessary, restore any W32.Magistr.39921@mm infected files from a clean backup.

# All new Radeon checks in

ATI, one of the leading graphics card manufacturers in the world has introduced two new products that use its second-generation Radeon processor. Both the Radeon 7500 and the Radeon 8500 cards will make use of the new Microsoft DirectX 8.1 API. New technology that has been incorporated includes TRUFORM, which is a rendering technology that will generate smoother, more natural 3D images.



Encouraged by the reasonable success of the original Radeon, ATI is aiming the new Radeon cards directly at nVidia's top-of-the-line GeForce 3 based cards.

◆ *Quake IV* in development ◆ Sircam virus still a serious threat ◆ Studies show computer gamers have under-developed brains ◆

## realitybites



*"Back doors should be placed in all encryption products as a matter of national security"*

**Senator Judd Gregg,** making a proposal, by which the US government would have a back door to encryption programs with a court order.

Here's a leash I want you to wear, and it won't hurt...not too much.



*"Simply put, Windows XP is the best operating system Microsoft has ever built"*

**Bill Gates,** when the gold master CD for XP was finalised.

Which is a distinction as worthy as the smartest kid in the mental institution.



*"More people will be using mobile phones than fixed phones throughout the world"*

**Kurt Hellstroem,**
Ericsson president

Mobility increases, stability drops.

## DivX goes mainstream

A small alternative film distributor called Strand Releasing has become the first commercial partner for DivX Networks. They have licensed the DivX Open Video System to use its video-compression format for providing customers with secure DivX downloads.

Consumers will now be able to rent films directly from the Strand Releasing Web site. However, the file will remain accessible only for five days.

DivX Networks released a new version of its DivX codec just a month ago. The new codec was built from scratch, unlike earlier versions, which were based on a Microsoft implementation of MPEG-4.

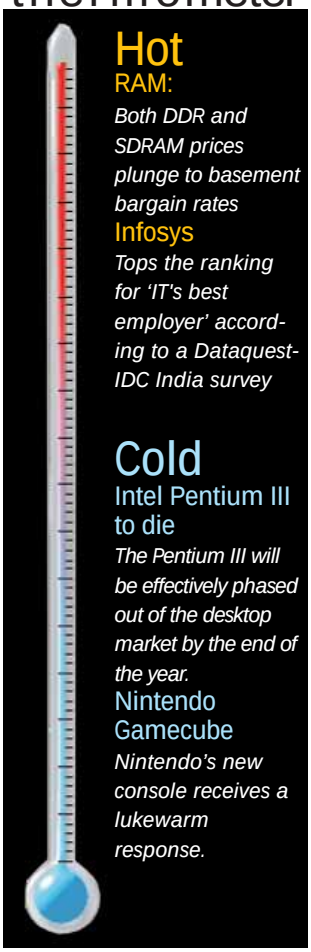
Though there are other dominant players like RealNetworks and Microsoft around, Hollywood studios continue to look out for better technology solutions.

## Intel vs VIA

The processor giant Intel is suing VIA, and claiming that VIA's P4X266 and P4M266 chipsets infringe on Intel patents. The suit, which was filed after a long verbal duel, has resulted in VIA filing a countersuit against Intel, claiming that the Pentuim 4 and 845 chipsets infringe on VIA patents.

The debate is centered primarily on a cross-licensing agreement between Intel and S3 Graphics regarding access to P4 technology. VIA, which acquired S3, feels that those agreements are still valid. Intel, of course, disagrees with this interpretation.

## thermometer



**Hot**

**RAM:**
*Both DDR and SDRAM prices plunge to basement bargain rates*

**Infosys**
*Tops the ranking for 'IT's best employer' according to a Dataquest-IDC India survey*

**Cold**

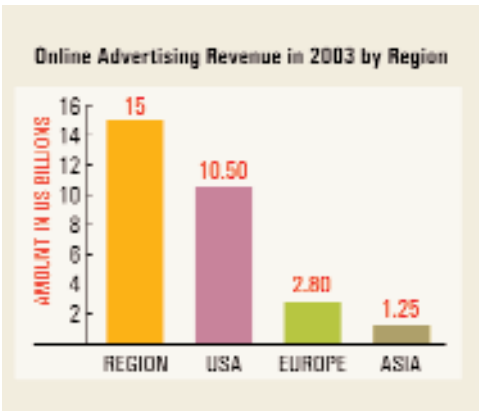
**Intel Pentium III to die**
*The Pentium III will be effectively phased out of the desktop market by the end of the year.*

**Nintendo Gamecube**
*Nintendo's new console receives a lukewarm response.*

## thumbnail

### Online Advertising Revenue Trends

Asia still at the bottom-rung, U.S. remains at top







Source: www.nua.com

◆ Yahoo! puts squeeze on GeoCities users ◆ Three Recordable DVD standards go head-to-head ◆ HDTV Network debuts

## Metrics

**38°C (100 Farenheit)**
Intel Pentium III 1000

AMD Athlon 1400
**370°C (698 Farenheit)**

The temperature of the processor after the Heatsink and CPU fan is removed from the processor.

*Source: Tom's Hardware Guide*

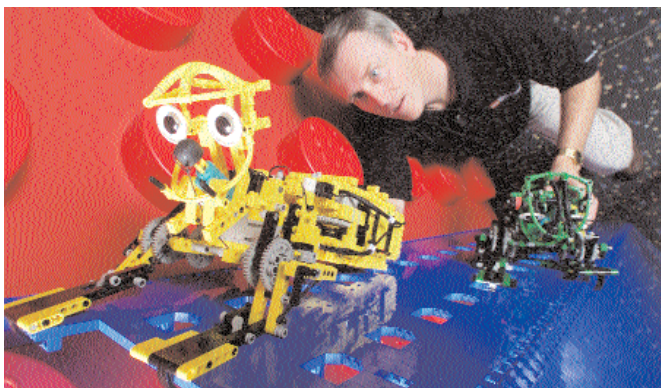
# Realplayer to go Mobile

Texas Instruments has decided to incorporate RealPlayer Mobile, a wireless version of the popular digital media software for the PC, into its chips for wireless devices. This would allow manufacturers to offer streaming media playback on mobile devices like cell phones and handhelds.

This would allow wireless service operators and handset manufacturers to send news and entertainment content on RealPlayer's mobile digital media player. The software will be optimised for TI's OMAP architecture, which boasts of high-performance at low power usage. Support for RealPlayer Mobile is expected to be available in the first quarter of 2002.

# Stirring up a Mindstorm

Lego's successful Mindstorm digital toys have stirred up a lot of debate recently. The company, which is famous for its educational toys, found that some ingenious Mindstorms's users went and modified some of the proprietary code. This was then posted on the Internet, and people have begun writing their own software for the robots. There is even a completely new operating system called LegOS written for the toy. It seems likely that while Lego might not do anything to stop people from 'customising' their toys, it will take steps to ensure that their patents are not exploited.



## Who is?

Alexey Pajitnov

▲ *Who is he?*

He is famous for inventing one of the the most addictive games of the century, *Tetris*, which set a record of sorts by selling 50 million licensed copies.

Inspired to become a mathematician in order to enjoy the puzzles, he also developed a game called *Genetic Engineering* prior to *Tetris*. He says that the idea and the balance of mechanics is the secret behind the success of any game.

▲ *Why is Tetris popular?*

At the time it was launched, it did not have much real competition. Besides this, the gameplay really appealed to a wide group of people that found that it required a combination of speed of thought and the ability to match patterns in the blocks.

Hence *Tetris* was prescribed by doctors for kids over 12 years to develop their thinking ability.

▲ *Where to look for more?*

To learn more about *Tetris* and for stories related to the game, logon to www.tetris.com or just ener the word 'Tetris' in any on of the popular search engines.

tomorrowstechnology

# Gizmos' graveyard

Most gadgets that die are unceremoniously dumped in landfills. The European Comission wants manufacturers of everything from TVs and computers to mobile phones to take back and recycle up to 90 per cent of their products by 2006.

Recycling is especially difficult with small intricate devices where dismantling is often difficult or impossible. A team of researchers at Brunel University have devised a way to use smart materials to make discarded mobile phones or computers pop apart on request. Their components—circuit boards, screens, switches and the like—will sort themselves into separate piles.

They are pinning their hopes on a technique called active disassembly using smart materials (ADSM). It relies on the unusual properties of shape memory alloys (SMAs) and shape memory polymers (SMPs). The new fasteners will pop out when they are heated to the preset temperature. Later, products can be designed from scratch with ADSM in mind.

Manufacturers are bound to take advantage of the consumer appeal afforded by these products. Fancy a phone that is discreet and businesslike all week, but becomes jazzy and bright for the weekend? Just pop it under the grill for a few seconds. Then on Sunday night, another quick blast could sober it up, ready for work on Monday morning.

◆ 'Bin Laden' tops 'Pamela' in Internet search keywords ◆ China spots 'Code Blue' worm ◆ NEC, Sony see promise in fuel cells ◆

## POP goes the e-mail

Dear Karan,
In my opinion the article 'Born to be Free' in the September issue was not up to the mark.

Why review the Yahoo.co.in service instead of the Yahoo.com service which most users in India today prefer?

The explanation of the benefits of using a POP3 e-mail service was lacking in your review, something that most people are unaware of.

You have concluded that Hotmail, in spite of a measly 2 MB space, is feature-rich and the best e-mail service overall. I think that 2 MB of space is very miserly as compared to what other services are providing.

In the end, I think there is little logic applied in your selection of the best e-mail service provider.

*NIKHIL PAI,*
*Via e-mail*

**digit**

Dear Nikhil,
Let me try and answer your queries one at a time...

We believe that speed and reliability are the greatest concerns for most people using free e-mail services, especially in India. This is why we decided to review Yahoo.co.in and Lycosasia.com, both of which by virtue of their location, are more reliable and faster for users in India.

While we did consider the availability of POP3 access we found that there were several other feature parameters that deserved greater importance when we were considering an overall rating.

As far as the maximum mailbox capacity is concerned, keep in mind that while account sizes do vary, most services have placed a limitation on the maximum attachment size or e-mail size, which reduces the flexibility that a larger mailbow—whether it is 6 MB or 20 MB in size—should offer you.

This story was a broad-based review that objectively evaluated the e-mail services over 40-odd parameters and tells you which site offers the best overall feature set.

## Poll and push

Dear Digit,
I tried to check out the results of your 'Best E-mail Service' poll at www.thinkdigit.com. However, while I am able to vote for my favourite service, and received a confirmation that my vote has been registered, the site no longer displays the result. I was especially excited to see the results after an article in the *Times of India* claimed to have gathered 49.56 per cent of the votes.

*SUSHUBH*
*Via e-mail*




**Illustrations:** Mahesh Benkar

**digit**

Dear Sushubh,
The poll that you mention was conducted by us to get an indication of the opinion of our readers. We decided to discontinue the poll when we found that due to the relatively smaller number of voters this was being used by certain people to make their site seem more popular than is true. If you are interested in getting a real picture of users opinion of e-mail sites, I would suggest that you keep an eye on the Popular Choice polls which begin on October 1, 2001 and are a part of of the Digit Web Awards 2001.

## Sher Khan

This is a poem sent in by one of our readers that we just had to share

*Arz karta hoon…*
*Jo sadiyaon se hota aaya hai,*
*Woh repeat kar doonga,*
*Tu naa mili to tujhe Shift Delete kar doonga.*
*Ladkiyaan sunder hain aur lonely hain*
*Problem hai ki bus voh Read Only hain*
*Shayad mere pyar ko taste karna bhool gaye*
*Dil ko aisa Cut kiya ke Paste karna bhool gaye*
*Woh samajhte hain dil tod diya to hum Dead hain,*
*Woh nahin jaante ki is dil main aur kitne Thread hain*
*Tumhare samne hain itne Sample, kabhi hamein bhi Pick karo,*
*Hamare pyar ke Icon pe kabhi to Double-click karo*
*Roz subha hum karte hai itne pyar se unhe good morning,*
*Woh humhe ghoor kar dekhte hain jaise,*
*0 error but 5 warning.*

*PIYUSH BISANI*
*via e-mail*



## A matter of choice

Dear Karan,

I have been a reader of your magazine from its first issue onwards. In your editorial in the September 2001 issue, you commend VSNL's step of denying subscribers' basic rights of freedom to choose which e-mail identity they use while sending mail. While I do not like spam and am at the receiving end of a lot of junk mail myself, I still do not feel anyone has the right to take away from me my freedom to choose my e-mail address.

I run a small company with its own Web site and have configured my e-mail client to display my Web site e-mail address. I use multiple ISPs and if they were to start this practice as you have recommended in your editorial, I would be stuck. Having to use the reply addresses of the ISP which lets me connect on a particular day doesn't make sense because it would confuse my clients. I don't see why anyone should take away the right to use the e-mail address of my choice from a paying customer like me.

I am surprised that you are thinking so conservatively and are forgetting that Internet is there to promote freedom and not stifle it.

*ANAND PRAKASH*
*Via e-mail*

digit

Dear Anand,

I can understand your point about how this move from VSNL is going to affect the way you conduct your business. I also agree that you need to have the right to choose your own e-mail address.

However, I think that it is necessary to understand that while you, as a responsible individual, might be taking steps to ensure that you direct your messages to people willing to receive them, a majority of marketers today have no such compunctions. Which raises the question of whether individuals have the right or freedom to choose what kind of messages they receive.

Another point to be considered is whether VSNL will offer you a service that will allow you to send mail via their server using your Web site address, at a price. While this might seem unfair at this point of time, this is something that Internet service users have to reconcile themselves to all over the world, mostly because of the inability of ISPs to handle the amount of spam generated.

You mention that I am being conservative when I say that all ISPs should consider such measures. I beg to differ. Sit back for a minute and think of the Internet as a shared resource that is depleted in a significant manner by spam. You will see that there are really only two alternatives open to us. Either we let the existing system remain because change is too difficult, or take the other more difficult course due to the benefits it could bring us in the long run.

## Goof Ups

- Lokesh Bhama points out that the images and descriptions of the Fuji Instax and the Sony DCR-PC9 Mini DV recorder were exchanged.
- In the Monitor comparison test published in the September issue, the Scoreboard on page 114 lists the incorrect e-mail contact for Samsung Electronics India. The correct e-mail address is marketing@samsungindia.com

*Notice any goof-ups? Write to goof@jasubhai.com*

## Short Bytes

**C_ _ P _ _ _R**

We received a lot of responses to Udit Madan's letter in the September issue of Short Bytes requesting the full form for the word COMPUTER.

While we had some interesting suggestions like 'Condemnable Operator of Machine Peripherals Using Tardy Electronic Resources', many of you came up with this one: 'Commonly Operated Machine Purposely Used for Training Education & Research'.

*Via e-mail*

*If you have suggestions on how to make Digit better, come participate in the reader survey at http://www.thinkdigit.com/survey/betterdigit*

## Monitor it right

Dear Karan,

The monitor comparison test carried in the September issue of Digit had some errors in it. We find that not enough care has been taken while compiling the data for the tables in the magazine.

In the comparison table there are inconsistencies in the dot-pitch listed for different products. In some cases you have listed the horizontal dot-pitch and in others the diagonal dot-pitch, which is completely misleading for your readers. This is a gimmick that is used by manufacturers to cause confusion in readers minds about the performance of their products.

We would like to point out that the errors are present in the Scoreboard on page 114 and list the incorrect dot-pitch for the Samsung 15-inch monitor. The actual diagonal dot-pitch should read as 0.28. This mistake has been repeated on page 115.

It is disheartening to find such errors in a leading IT magazine like Digit.

*UMANG*
*Roop Electronics & Allied Industries*

digit

Dear Umang,

The error you refer to, which was due to an oversight at our end, is regretted.

As you have mentioned, the dot-pitch should be measured diagonally and this has been kept in mind by us while evaluating the monitors.

The inconsistencies were a result of human error, in spite of our best efforts. We shall ensure that greater care is taken in the future.

**Send your letters marked 'Readers Letters' to the Digit office:**
**D-222/2, MIDC,**
**TTC Industrial Estate,**
**Om Sagar Building, Nerul,**
**Navi Mumbai 400 706**
**Phone: 022-7629191/9200;**
**Fax: 022-7629224**
**E-mail:**
**readersletters@jasubhai.com**

# Music, by George!

Meet India's music man, **Chris George**, of the EasyBuyMusic fame. This young CEO, who believes a lot in the potential of online music in India, dares to win

VIDYARAMANAN S.

What would optimism be if it walked on two legs? The answer, at least in the music industry in India, would be Chris George. He's the CEO of EasyBuyMusic. The man who walked down the dotcom graveyard after the recent crash and built an entire portal for music aficionados in India.

At a time when hundreds of dotcom ventures with flailing arms and drenched enthusiasm were shutting shop, George stepped into the music market with guts and determination. And working on his unfailing belief that "Who dares wins!" he took charge of his online music store, www.easybuymusic.com.




Chris George, CEO, EasyBuyMusic

"A buyer will buy music if it's good and not bother with the record label"

George completed his B.Sc in India before heading to the New York University to earn an MBA. He became an understudy to the head of the Department of Business and Entrepreneurial Studies of the university and even set up the Young Business Entrepreneurs Society. For inspiration, he doesn't look further than the Virgin CEO Richard Branson who he thinks is the perfect amalgamation of fun and work.

George started his career with Sprint PCS and later moved to Bell Atlantic where he successfully handled its value-added services division. When his father hinted at his returning to India, George readily agreed. Mumbai had a promising market and where he felt he could gainfully employ his knowledge and experience. He honed his skills handling his family businesses and soon decided to carve out a career in the music industry.

He had started an event management and promotion company called Danzig Corp. during his college days in India. His company handled some events like the Bryan Adams concert and the Lakme Maximum Rampwalk. Thereafter, George, along with Shantanu Roy Ghosh, a childhood friend and partner at Danzig Corp., came up with the concept of getting music across to music lovers whenever they want it, from wherever they want it.

The concept was sold to Times Music and it saw musical light in the form of 'Dial M for Music', a successful exercise. It later evolved into a new business model executed via EasyBuyMusic, now India's largest online music store.

Now, when he talks about the competition in the music market, he grins and says "music is always easy to sell". And continues: "The band is always the brand. A buyer will buy music if it's good and not bother with the record label. Consumers want a general purpose aggregator."

A buyer who buys music cassettes and CDs from a certain place, EasyBuyMusic for instance, will come to the same familiar place to buy and download music when digital download gains momentum. This is how George believes the firm will sustain itself in the long run.

EasyBuyMusic has developed one of the best of the supply chain management (SCM) methodologies driving its e-commerce engine, which other companies like Rediff have implemented too. Many firms have the technology but not the right distribution platform and George aims to provide assistance to such companies to help them fare better in the online market.

Although the Internet is currently only one of the channels through which revenue is being generated, the rest of the revenue accrues through orders placed via phone calls on their toll free number.

George also believes that buying over the Web will soon increase, leading to greater sales and success for EasyBuyMusic. And though India is a difficult market, it is not an impossible one to capture—he has faith that will sustain.

For how long, the market and his determination will tell.

# Bheja Fry!

Cell phones cause cancer: urban myth or scientific truth? Sriram Sharma and Dipayan Choudhary speak with a radiologist and an industry representative about hazards that come with owning a cell phone

A paper published in the *Science Journal Differentiation* says that repeated exposure to mobile phone radiation leads to the continuous manufacture of heat shock proteins within cells. Heat shock proteins are always present in cells at a low level, but are manufactured in larger numbers when the cells are under stress because of heat or other environmental factors. If produced too often or for too long, they are known to cause cancer. This paper is the only evidence that heat shock proteins are produced because of electromagnetic devices.

Although, the FDA in the US has not reported any definite link between cancer and cell phones, US laws govern that the amount of radio frequency signals emitted by cell phones be printed on all phone packages. All mobile phones emit electromagnetic radiation. A mobile phone in the US operates between 850 MHz to 1,900 MHz. At that range the radiation produced is in the form of radio frequencies, the same as in a microwave. Just as a microwave heats food by means of radiation, with repeated usage of a cell phone, your cells too get heated.

However, researchers in the US and the UK say there is no direct link. The average incidence of brain cancer is six among a hundred thousand people. Unless there is evidence that the incidence is higher than that, no link between cancer and cell phones can be drawn. With electromagnetic radiation present in the atmosphere and many genetic factors also being responsible for causing cancer, it is difficult to point out the culprit.

Technology should not cause paranoia, but it should not cause carelessness either. The risks involved are low as compared to the benefits of this device.

**J. M. Modhe**
Consultant Radiologist,
Hinduja Hospital, Mumbai



"Electromagnetic radiation is present everywhere, and environmental and genetic factors also cause cancer. It is difficult to point out the culprit"

What do *you* think? Come, speak your mind at www.yahoo.co.in

Scratchy reports and unconfirmed studies have led to a belief among consumers that radiation from mobile phones causes cancer. But scientists at the National Cancer Institute (NCI) have concluded after a study they conducted that people who use cell phones are not at any greater risk to cancer than non-cell phone users. This study was conducted to find a link between cell phone usage and brain disease and involved having over 800 test subjects answering questions regarding their cell phone usage patterns. The questions included number of minutes used and the model of the phone they operated. The results found no correlation between increased chances of developing Glioma, the most common form of brain cancer found in adults, and the usage of a mobile phone. The study is due to be published in the *New England Journal of Medicine*.

The increasing concern about radiation being emitted by mobile phones have lead to it being mandatory for all cell phone manufacturers to put radiation ratings on all mobile phones sold in the US. This has been prompted by strict requirements from the regulatory authorities and I think that such requirements are put in place for the Indian market.

The question still remains "Is answering a call going kill me?" I don't see a clear answer to that coming up in the near future. Maybe, five years to 10 years down the line, we might see a report that undeniably establishes that mobile phones are safe or otherwise. Until then I would recommend that you use a 'hands free kit'. All you need to do is use a cell phone equipped with nothing more sophisticated than an earpiece that will allow you to take calls without the antenna being positioned near your head.

**Rajiv Sethi**
Marketing Manager,
Samsung Telecom



"Maybe, five years to 10 years down the line, we might see a report that undeniably establishes that mobile phones are safe or otherwise"

www.yahoo.co.in
Catch 'em live on Yahoo!
*Rajiv Sethi* October 18 at 4.p.m.
YAHOO! INDIA



Imaging: Ashwin Boricha

# WHAT'S SUPER IN A SUPERCOMPUTER?

We have all heard of supercomputers. But do you know where they are used and how they compute, and what the latest developments are in the world of quantum thought?

Supercomputers have come a long way since they first came on the scene. Their ability to perform a large number of complex calculations at speeds that were hitherto unheard of have found them several uses. Supercomputers are now being used in fields like economics, biology, astrophysics, Artificial Intelligence and many others. They have played a crucial role in the advancement of knowledge and the quality of life. But where did it all begin?

## It all began with Cray

Way back in 1960, after starting his Control Data Corp. (CDC), Seymour Cray began designing a system that was to be the first supercomputer, the CDC 6600. This was also the first to employ three-dimensional packaging and an instruction set that was later referred to as RISC (Reduced Instruction Set Computer). Cray realised that merely improving clock speed would not improve computation speed in any way. He anticipated the need for parallelism in computation and came up with the CDC 8600 which had four processors, all sharing the same memory. Since developing necessary software at the time was no simple matter, Cray suggested that vector capabilities be built on uniprocessors, which would improve the performance greatly. Cray Research, a division of CDC, came up with Cray-1, Cray-2, Cray-3 and Cray-4.

Cray-3 and Cray-4 worked at clock speeds of 500 MHz and 1GHz—all this in 1994 when no

Rated The Best Flatscreen TV by AV Max...

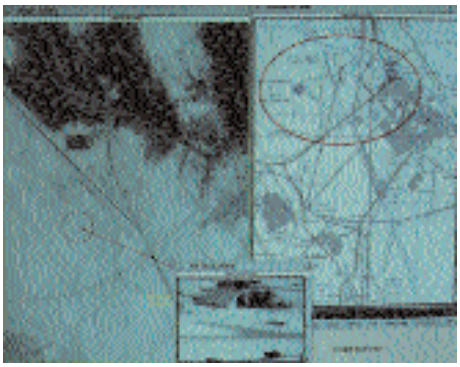
BPL digital drool of the Month

Source: AV Max Annual Awards November 2000 (53 cms Flatscreen category)

one had produced a machine capable of a speed of even 200 MHz. All these systems were stepping stones for further development in the supercomputer arena.

### What's the difference?

Supercomputers do not differ from desktop PCs in processing power, storage capacity and memory alone. It's the architectural and algorithmic change, which defines a supercomputer. There is a difference in the manner in which a desktop computer and a supercomputer process data—supercomputers carry out large amounts of parallel and vector data processing. These machines are built on multi-processor architectures with unified memory of a high order wherein computations take place in terms of megaflops, teraflops or petaflops. They work on special algorithms programmed into their hardware and usually work with more than 10-15 processors with memory architecture comparable to a desktop PC's processing power. The parallel processing of information allows these computers to analyse and do complex arithmetic and mathematical calculations and predictions. Hence, they are employed in areas such as weather prediction, DNA computations, Artificial Intelligence, molecular modelling of drugs, space research, statistical analysis and more.



Atmospheric pressure variation is pointed with a red circle. Simulated with 22 supercomputers

The supercomputer can either be a single computer or a network of nodes or a grid. These computers mainly rely on the parallel and vector processing techniques that are employed in the making of these machines. The algorithms that are used to parallel process data could either be hardwired or it could just be the software which makes effective use of the hardware and taps the power of a supercomputer's processors and their unified memory.

### The network and the grid story

To form a supercomputer, many smaller computers can be networked together to work in unison on a single process and can be controlled by software which can carry out effective data management within this network.

Grid computing is an entirely new concept. A grid computer is defined as a whole spectrum of clustered and distributed data processing techniques that allow many machines to be ganged up together to solve complex computational problems. Its principle lies in utilising the idle time of computers connected to the Internet. SETI@home (Search for Extra Terrestrial Intelligence), for instance, is a project, which lets you donate CPU cycles to search for extra terrestrial life. The idea here is to harness the idle time of computers connected to the Internet and use them to perform complex arithmetic, which would otherwise require large parallel processing supercomputers costing millions of dollars. On an average, a desktop PC uses 80 per cent of the CPU power and time and rest of the time it remains idle.

United Devices is an initiative that saw its birth from the SETI@home project, which is being considered as the largest and most successful distributed computing project in history. United Devices helps organisations all over the world carry out their projects on virtual supercomputers created with the power of all the connected computers.

### A Super-network

Although the idea of creating supercomputing power from PCs connected to the Internet is certainly good, certain operations (especially in research) do require the networking of true supercomputers—those with parallel and vector processing capabilities. The applications that run on these grids need more bandwidth than that offered by a local area network or the Internet. More importantly, these systems handle extremely sensitive information, which require more robust security. Researchers and programmers worldwide have collaborated on a project that answers these supercomputing needs. The project, code named Globus, is an open source initiative for grid computing and is focused at major corporations that can use grid comput-

## Vector Processing

A vector, in computer terms, comprises the starting address in the memory, along with the length through which the vector data runs and the length of each element in the array, called stride. Machines with vector processing capabilities read the entire vector or the array into the memory and perform operations on them in a single cycle and write them back to the memory also in just a cycle.

Basically vector processing is a SIMD (Single Instruction Multiple Data) parallel processing technique. A scalar technique would require that one instruction at a time for each data be operated on. Vector instructions take one or more vector registers (a place where the computer stores the data it operates on) as operands and perform the same operation on each related element to provide the resultant vector. Many scalar instructions clubbed together effectively form a single vector instruction. Here, the same instruction is carried out on all the vector elements. You can execute independent vector instructions in parallel to quicken computation and to decrease the turn around time for a job. This method of processing is effectively used in supercomputers to make them work simultaneously on an array of data at a faster rate.

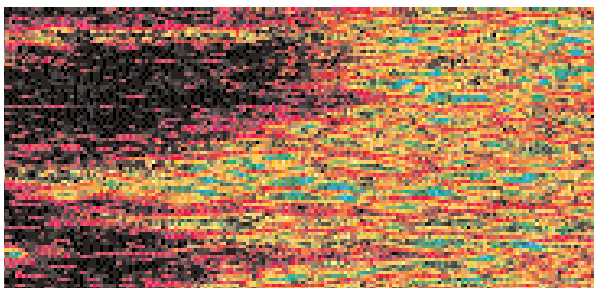
Rated The Best Flatscreen TV by BBC World...
BPL digital drool of the Month
Source: BBC World "Moneywise" Programme on 24th July 2000

## Quantum Computing

Noting the rate at which the number of transistors on a chip is increasing, by 2030 we will be in a position wherein circuits on the microprocessor will be measured on an atomic scale. The next step will then be to program atoms and molecules to do large, high-speed computations—this is quantum computing.

Still at the level of research, quantum computers are believed to boost computation powers to speeds billions of times faster than any silicon-based computer. When introduced into daily life, quantum computers will fuel the growth of technological advancements to greater heights. They work on qubits (quantum bits) which could be in either 0s or 1s. Qubits represent atoms and molecules working in unison as processor and memory. Since a quantum computer can have multiple states unlike a normal silicon-based computer, it's believed that these computers would be a billion times faster than conventional computers. A 30-qubit quantum computer can achieve speeds equivalent to 10 teraflops (trillions of operations per second). Compare that to supercomputers that are still in the teraflop range.

IBM's Almaden research centre claims to have created the world's fastest quantum computer operating at a speed of 5 qubit. The order-finding problem used in cryptography involves many functions and the quantum computer developed by Almaden solved the functions in a single step—any other computer will require repeated cycles to solve it. Quantum computing being still at a stage of research, it would take many years to come into production.



Simulated airflow over an airplane wing shows the transition from smooth, or laminar, flow (dark areas at left) to turbulence (rippled areas at right)

ing to solve organisational IT issues. IBM is developing the systems software for Globus and the project is called eLiza. This project will serve as the backbone of grid computers and the aim is to provide as many self-management technologies as possible which computers need to know when they are on a grid.

### More power

The need for faster computation is strongly felt in critical areas of research and development. Researchers need machines that can crunch numbers, formulae and equations that require billions of steps of analysis, predictions, decision-making, formulation, and so on.

Where exactly are supercomputers employed? Formulating astrophysical theories requires analysis of formulae and equations which, in a normal course, would involve decades of human hours. This is where supercomputing power can be utilised. Britain's biggest supercomputer at the Institute of Computational Cosmology is being used to verify the big bang theory. It analyses trends and existing data and draws a picture of the evolution of the universe. The heavy mathematical and astrophysical calculations are performed by a cluster of 128 Ultra SparcIII processors with a storage capacity of 112 gigabytes and 7 terabytes of RAM.

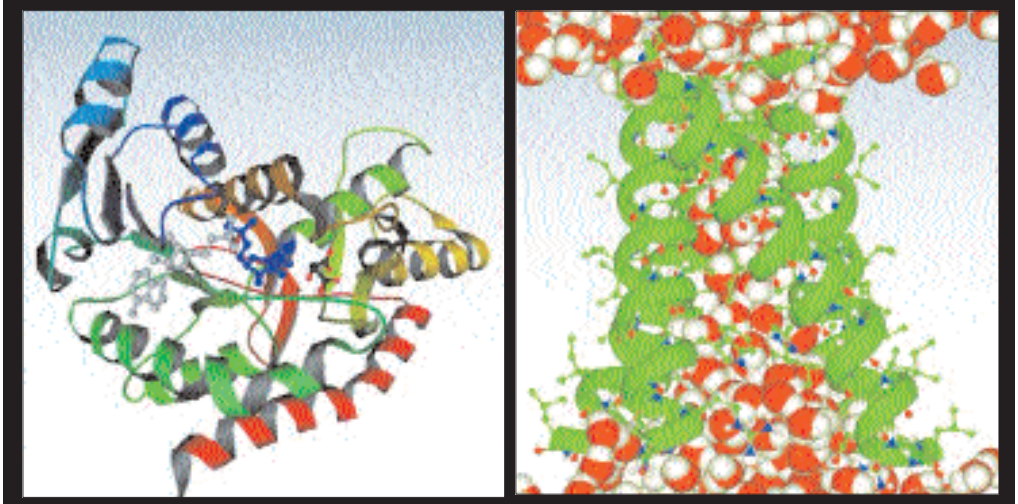
Areas such as medicine and other biological information systems also need the power of a supercomputer. DNA analysis, for example, would require an unimaginably large number of computations, but supercomputers can ease the task. IBM is working on a five-year project to develop a massive parallel-processing computer that can aid in the study of bio-molecular phenomena such as protein folding. The project called Blue-Gene aims to study bio-molecular phenomena and to develop and understand novel ideas. A petaflop power computer (1015 floating-point operations per second), with something like 50 times the computing power of all supercomputers in the world today, can only be realised through massive parallelism and this is what Blue-Gene tries to achieve. The project has actually evolved from Deep Blue, the computer which won a chess match against Gary Kasparov, the world chess champion in 1997. At the heart of Deep Blue's ability to play chess is its evaluation function. This is an algorithm that measures the 'goodness' of a given chess position. Deep Blue uses 'live' software that can actually generate up to 200,000,000 positions per second while searching for the optimum move. The ASCI White is a cluster of 512 RS/6000 IBM machines, which has a computing power that's 1,000 times more powerful than the Deep Thought. This supercomputer has an architecture that boasts of 160 trillion bytes of storage and a computing power of 12.68 teraflops. The machine can handle Web transactions of every single person in this world in just a minute!

Simulating fluid-flow on a computer involves the computer solving a series of equations, which are used to compute the pressure and velocity of fluid flowing around a body at any point in space, near the body. Application of supercomputers to these equations gave rise to the field of computational fluid dynamics. These equations require

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BPL digital drool of the Month

## Catalytic Simulation



The image above (left) shows the enzyme malate dehydrogenase with reactants for catalytic process in place. The position where these reactants are bound is specifically tailored in shape and affinity to enormously accelerate this specific reaction and to be inert to other processes. The image on right is the M2 proton channel of the influenza virus. This ion channel plays an essential role in causing infection and is the site of attack of a class of channel-blocking flu drugs. All these are supercomputer simulations of the analysis done in the biomolecular segment

formulation and excessive processing, in terms of human hours. Before the advent of supercomputers wind tunnels were the only way of testing the aerodynamics of new aircraft designs. Even today there are certain limitations to simulations done on supercomputers, and resorting to wind tunnels to verify the design for a new aeroplane seems a more appropriate option. But in due course powerful supercomputers will be able to overcome the existing obstacles.

Weather prediction is another area where supercomputers are employed since the analyses here require massive calculations and prediction schemes, which the machine does by performing millions of operations in a second. Using computer predictions you can draw conclusions about the pressure that might build up in a particular area, the possibility of rainfall or storms. Forecasters and weather scientists use computers that can crank through about 10 million calculations per second. Jet, one of the fastest supercomputers used for weather prediction, can perform 300 million calculations per second which would rise up to 5 trillion calculations per second as engineers try to add more processing power to the system. What really makes this $17 million, 273-processor supercomputer different from most other supercomputers is its powerful Linux architecture.

### Where is supercomputing headed?

Silicon-based chips are reaching their limits of miniaturisation and speed. But chips could get smaller and faster still. We have better material inside the human body, which can act as the raw material for building a powerful supercomputer. DNA has the capability to process and store data way beyond the capabilities of today's fastest supercomputers. The biochip is in its infancy right now, but that is where the future of supercomputing lies. Raw materials required to manufacture bio-computers will never get depleted as long as living organisms exist on earth. Besides, unlike the raw materials that go into the production of today's computers, these are not toxic. We can hope that with the computational power and storage facilities that DNA-based computers will bring with them, we can continue on our quest for a better life and for solutions for the mysteries of the universe.

### What's parallel processing all about?

While speaking of supercomputers, we frequently talk about parallel processing. So what's parallel processing anyway? To put it simply, it's processing more than one datum at a time. When we have multiple processors in hand, we like the data to be shared between all the processors to quicken the speed of computation. But they have to talk to each other with the datum that each one of them possesses. Hence they talk to a common mediator called the memory. This essentially describes the parallel computation process, in which a computer handles more than one instruction per second and performs computation at extremely high speeds.

### http://www

***Chess.ibm.com***
For information on Deep Thought and Deep Blue
***www.almaden.ibm.com/st/projects/quantum/intro***
For more information on different aspects of quantum computation
***www.gridforum.org/***
For the latest advancement on Grid computing
***www.computer.org/parascope***
Learn more about parallel and vector processing

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BPL digital drool of the Month

# SET YOUR SIGHTS ON 'EM

Another month, another selection of objects that leave you breathless. You can dream and drool over a stylish digital camera or a beauty of a mobile phone or any of the other *maal* that we have brought you





## Terapin Mine

### Mine, not yours!

Terapin's Mine is a powerful handheld that functions as your personal data storage device. It is Internet enabled and is capable of playing multiple roles–as a digital audio player and recorder, a digital photo album, a data-bank and data back-up. Not surprising considering the fact that it has dedicated about 10 GB of storage space for your personal files. Mine has a back-lit LCD panel for display and data transfer is simple since your PC detects Mine as an external hard disk. All you need to do is simply drag-and-drop your files where you want them. And keep jealous friends at bay.

**Web site: www.mineterapin.com/terapin/**

## Jam-It

### Palm music is snug music

Jam-It is a "revolutionary digital sound lab" that is a snug fit in your palm. You can carry it around to record songs or sounds and then play it back right away or download it to your computer and use it with your Jam-It mixer software, which lets you warp or add effects to sounds. It also lets you play your songs at any pitch using its pitch correction technique. You can even e-mail your sound creations to friends.

**Web site: www.jamonline.com/products/jamit_prod.asp**

## Nokia Musicplayer HDR-1

### Phony music

Nokia does not simply connect people; it also connects you to music. Check out its digital musical player that includes FM radio and a hands-free headset with voice dialling. Although a phone accessory, it is self-powered by AAA batteries and can be used independently of a Nokia phone. You can stash away an hour's worth of AAC and MP3 music files.

**Web site: www.nokia.com/phones/accessories/pop-ups/hdr1.html**









## Spy-Cye
### Secret agent



Keep an eye on your home and office no matter where you are. Cye is a personal robot that unlike conventional robots can be controlled by means of a graphic user interface on any PC. You can program it to do a variety of tasks such as cleaning the house, carrying food, and so on. Besides the usual robot functions, this nifty creation has a digital camera attached to it that lets you spy on what's happening at a location it's placed at while you are away. You can even control this spy remotely by visiting the Web site and entering your user name and password.

**Web site: www.personalrobots.com/spycye/**



## CellVic PDA
### It's a beauty

Feast your eyes on an exciting new PDA from CellVic. It can be used as an organiser, what with an elephantine memory capable of storing more than 10,000 addresses, thousands of handwritten memos and predefined schedules for 10 years. A PC link cable to connect to your computer with software for comprehensive data backup and synchronisation with your PC are some of its attractions.

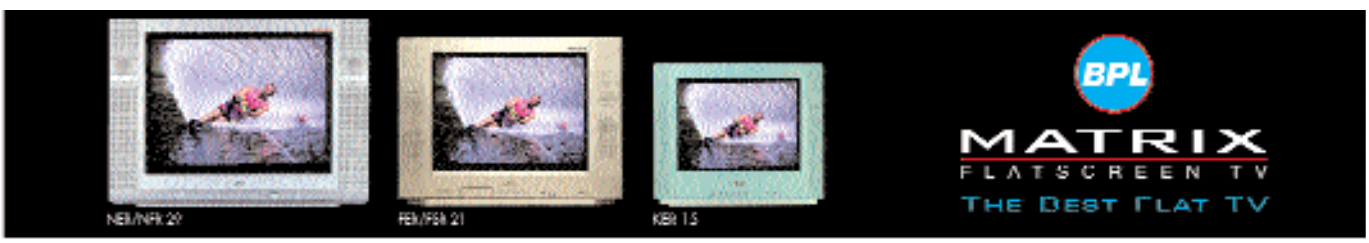
**Web site: www.cellvic.com/products/cellvici.html**

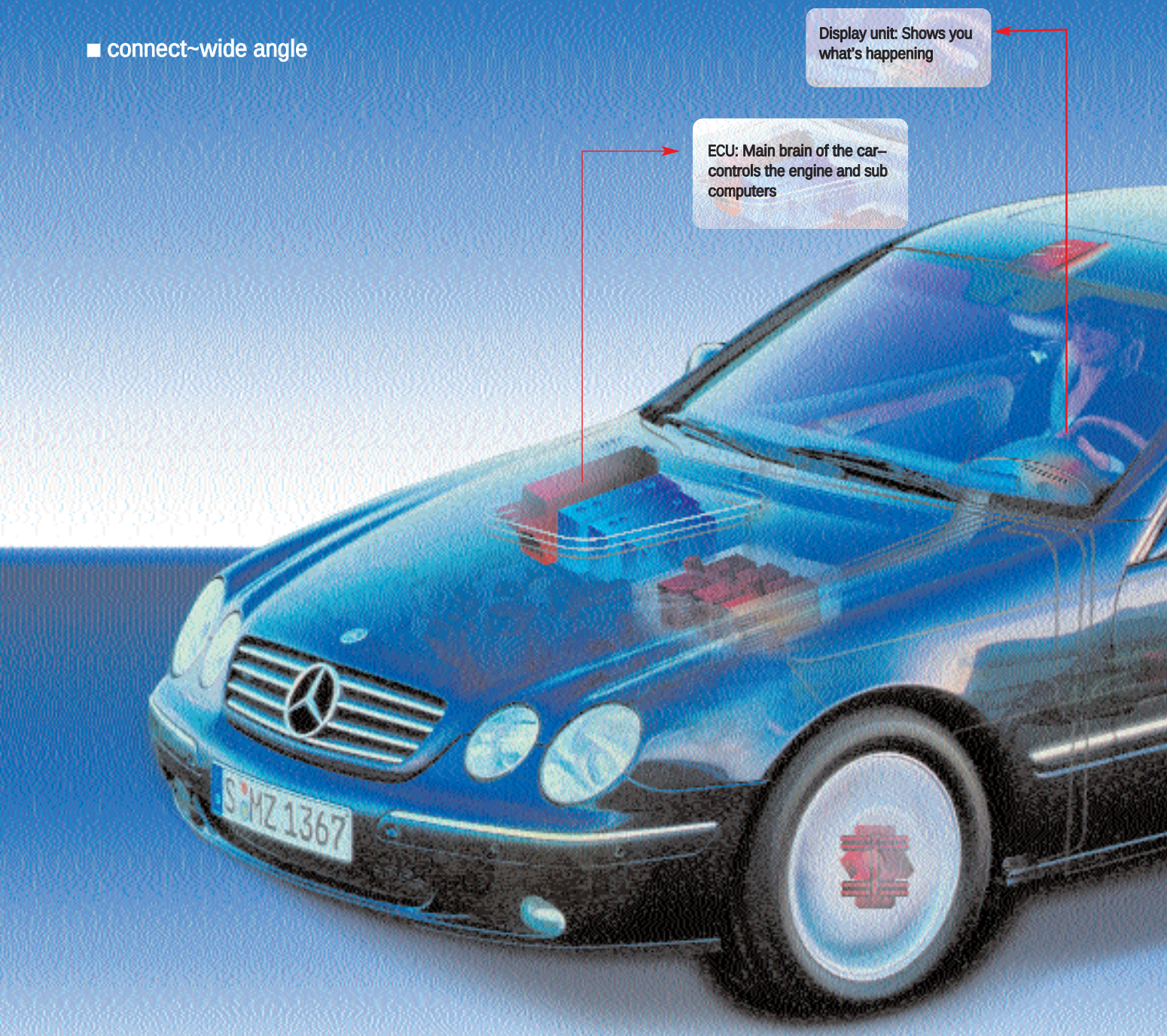


## Fuji FinePix 6900 Zoom Digital Camera
### For eye-popping pics, click

Another digital marvel from Fuji FinePix. Equipped with a smooth metallic body, a 6x aspherical zoom, and Super CCD technology, it churns out images with astonishing clarity at 6.0 million pixels. This camera has an F2.8 Super EBC Fujinon 6x optical zoom lens and a 13-step aperture. It also has a convenient USB port for quick file transfers.

**Web site: www.fujifilm.com/tcm.html?x-tempest-op=generic&ContentId=13407&UserTypeId=2&pagetype=ContentItemLeaf**



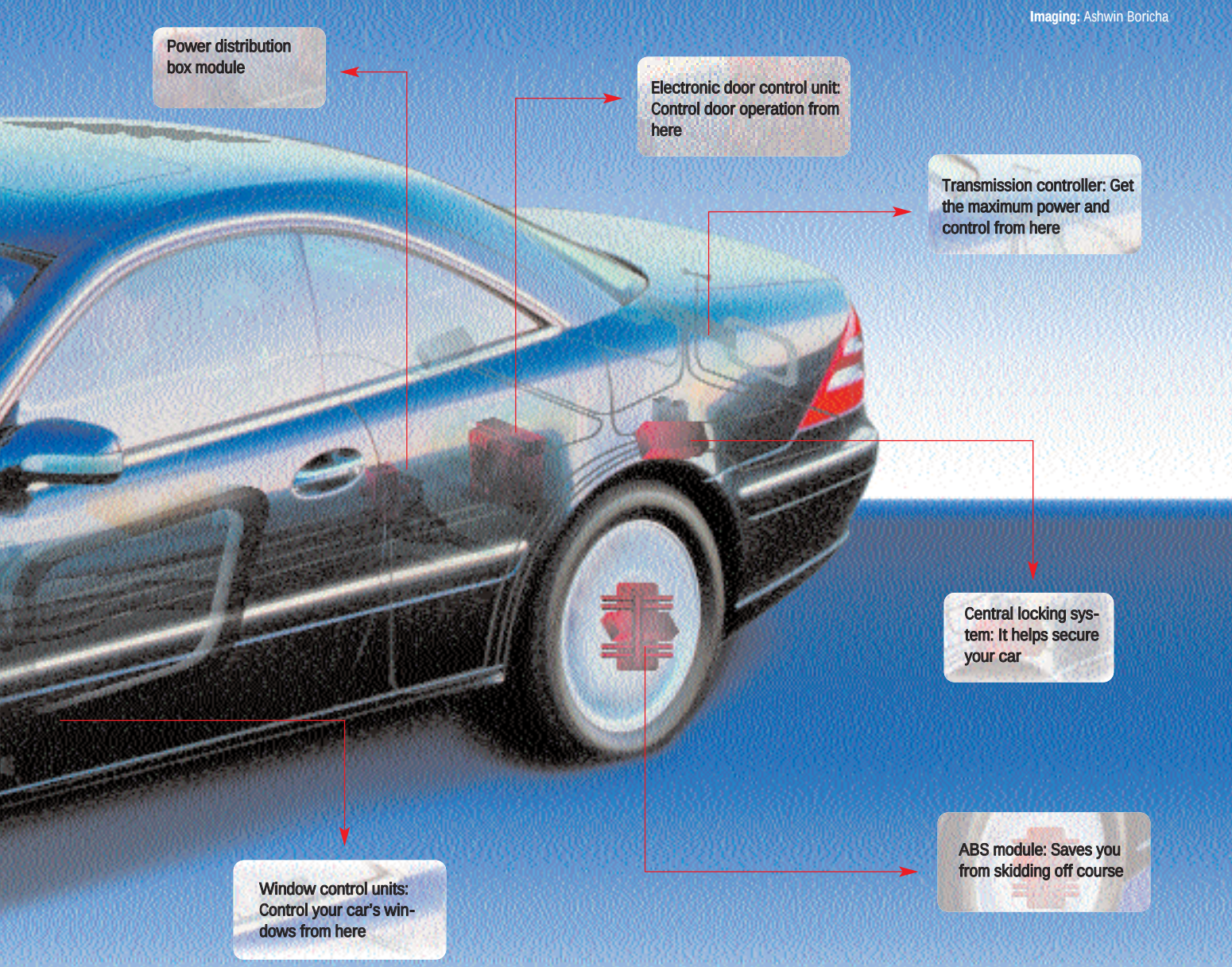

Automation, precision and better driving control…with computing power tucked away under the hood, cars get sleeker, faster and smarter

# ONE FOR

ANIL PATRICK R.

A deadly combination of beauty and brains. Who says that's difficult to find? Look closely and you'll probably find it in your own garage. We are talking about modern-day cars, the sleek road machines that use computing technology to control various functions and provide you with a smoother, safer ride.

Older cars such as the Ambassador or the Fiat of the 1960s and 70s were built with the view that a car was simply a machine that transports you between two different points. Factors such as comfort, safety and emission levels were not too high on the list of priorities of car manufacturers then. This changed with the passage of time. Manufacturers realised that there was a lot more to making a car than just churning out a machine that could transport you. And with developments in computing technology, computers came to be explored as a means of




Imaging: Ashwin Boricha

# THE ROAD

controlling various functions in a car. They are now used to control factors such as emission, power, fuel consumption, safety, communication, security, and navigation. (*See box, 'A Mind of its own', to get a better perspective of the different types of 'car computers'*). Consider the Mitsubishi Lancer. A head turner, this hunk of a car has an intelligence to match. The Lancer has several computers, one of the main ones being the one that controls MPFI (Multi Point Fuel Injection). You can also check the car's health using the instrument panel on the dashboard—computers again. The Lancer also makes use of computers to handle goodies such as power windows, remote door mirrors, fuel and boot lid controls, central locking, and so on.

**Computers@engine.car**

The Electronic Control Unit (ECU) controlling the engine is usually the most powerful comput-

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## Chip in the Fast Lane

Nowadays, embedded systems are widely used as car computers. Embedded systems usually consist of a microprocessor along with ROM (Read Only Memory) as a single unit. The instructions stored in ROM are used to perform the specific operations of an embedded system. For example, a computer designed for engine control will be specifically designed with instructions in its memory to that end.

Embedded systems are preferred over all the other options because they can deal with large amounts of data from several sensors simultaneously. And they respond very quickly to data inputs. Consider what this means. The risk of brakes failing to work is considerably reduced if you use embedded systems. Besides, they are compact and cheap and can withstand the extreme conditions in a car. Another major advantage of using embedded systems is that they can be networked easily—all the computers controlling various processes can be connected using internal wiring to act as a single system.

Moving on to use of networked systems, there are individual computer modules for various functions such as engine control, safety, climate control, security, entertainment and so on. All these modules when networked together let you have single point control over all of them and their co-ordinated operation helps optimise the car's operation to higher levels of perfection.

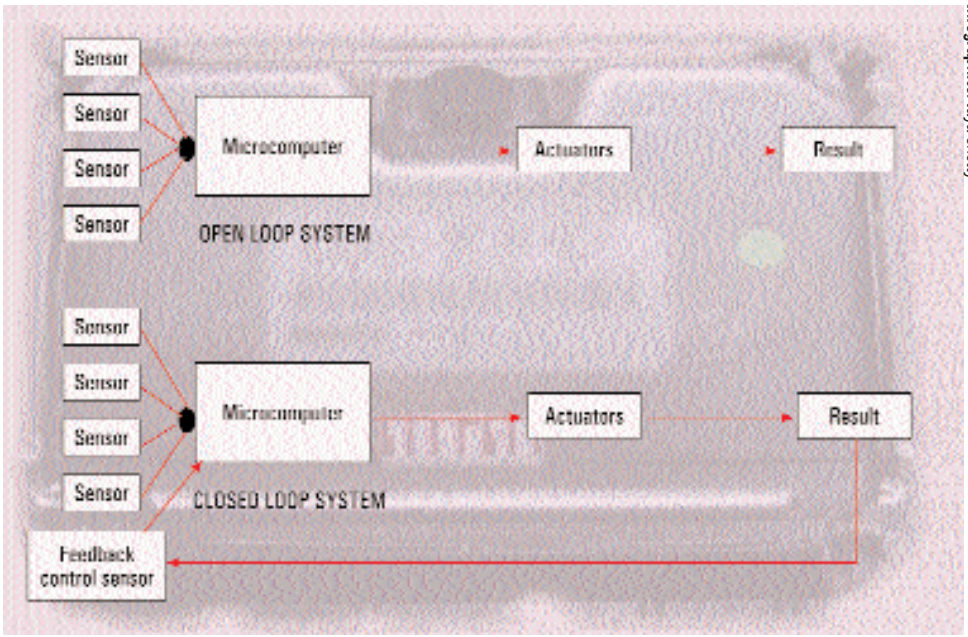
## A Mind of its own

A single computer unit consists of several sensors connected to it. These sensors measure various parameters and send the values to the computer. The computer makes decisions and necessary action is taken using devices called actuators. Actuators convert electrical signals from the computer to mechanical actions. For example, if the window has to be opened, then the actuator does the mechanical actions for that. When you press the window button a signal is sent to the computer controlling it. The latter generates a signal, which is usually amplified and passed on to the motor, which converts the electrical signal into motion by opening the window. The motor acts as the actuator here.

There are two types of car computers—analog and digital. Nowadays, digital controllers are preferred because of their higher levels of accuracy. However, many signals in cars are in the analog form. This conversion from analog to digital form is done using devices called input conditioners. These input conditioners consist of analog to digital (A/D) converters and amplifiers to amplify the signal.

All the computers are interconnected using internal wiring.

There are two types of systems used in car computers—open loop and closed loop systems. Both of them are quite similar, the only difference being that in the closed loop system a feedback control sensor is used. In such an arrangement, the control unit gets to know whether the input it provided to the system has been applied correctly. If the output is not the desired one, then the controller can take corrective action. Closed loop systems are the most commonly used car computer configurations today as they have the advantage of monitoring the engine in a better fashion.




Infographics: Jaya Shetty

er of all used in a car as it has to handle a load of inputs from sensors situated in almost every section of the engine. When we say powerful computers, we are not talking about 1.4 GHz P4s or Athlons. Some of the most powerful computers used to control engines are most likely to be 32-bit processors running at approximately 40 MHz. However, unlike the conventional PCs we use, a processor used in these car computers do not have to deal with processing frills such as wallpapers or a dozen different applications running at the same time. All it has to do is carry out the instructions required to control a particular applications. For this, the speeds at which these ECUs operate are more than enough.

How exactly does an ECU work? In an engine (when you consider the mechanical aspect of it), there are sensors for sensing parameters such as throttle position, spark timing, transmission shift mode, vehicle speed, load, and so on. Other sensors commonly used in engines include sensors for oil pressure and temperature, and those for fuel and coolant temperatures. All these sensors are connected to the main ECU, which collects the data and takes decisions regarding their optimum settings. Most cars that use the fuel

injection mechanism make use of computers these days. The optimal fuel injection levels for all possible conditions that a car can come across are programmed into these ECUs.

Now, if you are wondering what the big deal is all about, here it is. Remember all those cold mornings when you struggled with getting your car started? You turned the key—zilch, nothing happened! This is because it is difficult to get fuel to burn in cold conditions. In old cars, which do not make use of ECUs for engine management, it takes a while before you can coax the engine to start. But, if your car makes use of an ECU, the computer is fed with the temperature of the engine coolant and it detects that the igniting spark needs to be on for a longer time. The ECU then generates the required sparking sequence. That done, the engine starts up faster than it would have on a car without an ECU for engine management.

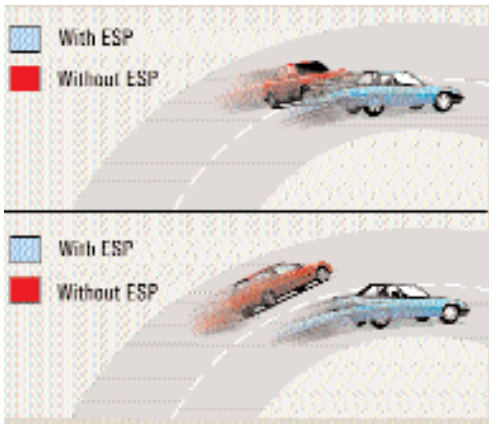
Computers are also used in emission control and better fuel consumption. In fact, it was the problem of emissions rather than improved performance that first led to the introduction of computers for engine control and management. Sensor inputs of parameters such as oxygen, engine temperature, air pressure, air temperature, and throttle position are continuously analysed by the computer. This analysis helps it control fuel injectors, spark plugs and idling speed to get the best performance and low levels of emission. Some cars even incorporate computers that regulate the octane content in fuel. This is very useful in a country like India where fuel adulteration is not uncommon.

So what do you say about a car like Honda City? Cute, huh? But this compact car has a brainy ECU to control its engine valves. The City makes use of VTEC (Variable Timing and Engine Control) technology for optimum engine performance and better fuel efficiency. At various engine speeds, this ECU modifies valve operation for the best possible performance and programmed fuel injection makes sure that fuel is used in the best possible manner.

### Cars with ESP?

No, we are not talking about extrasensory perception here. ESP in 'car talk' stands for Electronic Stability Program. The advantage of ESP is that it helps correct driving errors such as excessive acceleration or taking corners at dangerously high speeds. In many cases ESP makes use of Antilock Brake Systems (ABS) too (*see box, 'Cruising to Safety' for an insight into ABS*). An ESP monitors and compares the direction of vehicle travel with the driver's actions. These actions take place around 25 times per second. The ESP sensors recognise any signs of instability, understeer or oversteer as soon as it happens. It then proceeds to stabilise the vehicle using braking on each individual wheel along with a bit of engine management.

If you are understeering a car that is without ESP, it loses traction and begins to slide. But if your car is equipped with an ESP system, the latter immediately detects this—brakes are applied to the inner rear wheel and engine power is reduced as well. This helps ensure that your vehicle does not go into an uncontrollable skid.



The Electronic Stability Program (ESP) at work when you oversteer your car (first image) and also when you understeer (second image)

If you are oversteering, the rear wheels lose their grip and begin to skid. The ESP then applies brakes to the outer front wheel, which helps to bring the vehicle back into control.

### There's more to come

The uses we have just seen are not all. Besides the purely utilitarian functions that car computers serve, they can and are used for many other applications. Even the CD player or radio in your car makes use of a computer, usually the simplest kind. This computer controls functions such as remembering the CD sequence if you have a CD changer, or remembering the preset stations of the radio.

The security system of your car (if it's the key-less type) is also controlled by nothing less than a computer. But that's not all. There are several models of cars these days that come with self-levelling suspensions. If you are using such a model, you'll find that your car adjusts its suspension settings to suit the kind of road on which it's travelling. Once again, it's computers connected to sensors which are behind these suspensions. If several people use your car, you can set and save mirror and seat adjustments to suit each individual user—all by the means of a computer. As people demand more from their cars, the use of computers in cars is going to increase. All this to make driving a safe and pleasant experience even for those who consider driving a chore.

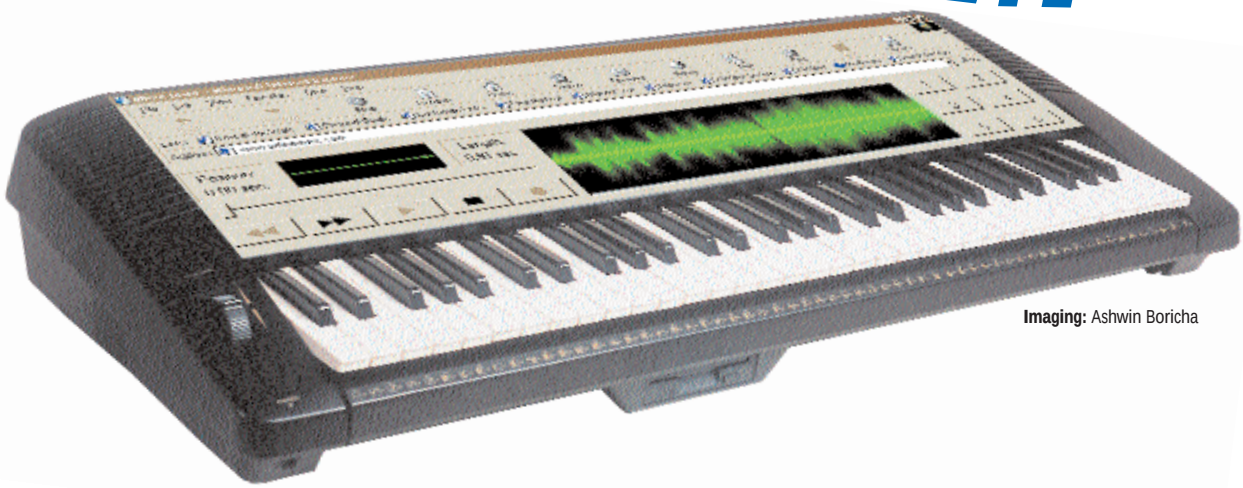
## Cruising to Safety

ABS (Antilock Brake Systems) is a feature that has been around for a long time. The main advantage of this system is that it prevents the wheels from locking while you are braking. If the wheels lock, the car could go into an uncontrollable skid resulting in a crash. Cars having ABS have optimum vehicle stability. Braking distance is also lesser in a car with ABS as compared to one that is without it. Needless to say, this is a boon in a country like India, where road conditions can be quite awful.

A typical ABS arrangement consists of sensors located in all four wheels and an ABS ECU (Electronic Control Unit). These sensors send the status of a wheel that is slowing down too fast to the ECU. The ABS ECU checks the status and then reduces the air pressure of the brake to that wheel which means the braking on that wheel is released. This ensures that the wheel does not lock up and does not go into a skid. Almost all ABSs have facilities for self-checking when the car starts to move. If the system is not working properly, the ABS is switched off and the conventional braking system comes into effect.

Computing technology also helps in cruise control, which keeps you at a safe distance from the vehicle in front of you. These systems make use of radar units to keep track of the distance and relative speed of any vehicle in your car's path. The distance and speed values are then used by the computer to control the throttle and brakes.

# Virtual Jammin'



**Imaging:** Ashwin Boricha

Make your browser a turntable as you mix, scratch, loop and jam your way to becoming a virtual DJ

AVINA LOBO

You're at a disco, grooving to some awesome remixes, wondering what it would be like to create some cool music yourself. Wish you hadn't ditched music lessons in school for cricket? Well, you can put that thought to rest, because you don't really need to know much about music or spend a bomb on players and mixers to get started with mixing tracks and jamming online.

## Musical and interactive

The Internet has shaken up the music industry in almost every conceivable way—from the composition of music to its distribution. MP3s are now an integral part of our lives and we don't need to take stock of the millions of people logging onto Audiogalaxy to realise this.

Whether you're a musician, composer or just a music enthusiast, the Web has a lot to offer you—information on composers and instruments, online interactive tutorials, free music files and music notation software. There's an entire range of software that can turn your PC into a synthesizer, enabling you to compose music from your keyboard in almost any form using almost any musical instrument.

The Web is also changing the way music can be rendered. Traditionally, music is a linear art form performed by musicians from beginning to end and heard by a usually passive audience. But online, it's the audience or users that have the ability to modify and control their musical experience, as in computer games or certain Web sites.

Creating music using an interactive media such as the Internet is a fledgling art form. But this doesn't stop online music from becoming truly interactive, thanks to applications such as Shockwave and Flash. Web pages with Shockwave plugins let you play around with music online, not just listen to it. You can do this with just your mouse, keyboard and at least a 56K Internet connection.

The applications designed to let you mix music online range from simple 'sound toys' that let you play around with a few sounds, save and e-mail your mix to sophisticated mixers with plenty of controls and tweaks that let you mix a large number of tracks simultaneously, upload your own files, add sound effects and broadcast your work.

## Sound toys

If you're new to mixing music online then you should check out these cool sound toys to get a taste of what its like to make music (or a lot of noise) on your browser.

Surf over to www.pianographique.com, a well-designed sound toy that lets you play a variety of ➜

## Music from Scratch

If you really want to get down to the basics, right to creating your own tunes from scratch, then you should head to **www.neuralsemantics.com** and try out their e-guitar Robocaster. It's a cross between an e-guitar and an e-piano and you can use your mouse to play notes on the piano keyboard or drag your mouse over the guitar string to pluck notes on the e-recorder's virtual guitar.

The Robocaster e-



recorder has an internal volume regulator that's independent of your PC's volume control. You can also use the controls on the recorder to create electric guitar distortion effects or create sound freaks. You can use the 'scaler' to customise your piano keys. Just enter the notes to get the keyboard of your choice. You can record your composition and save your masterpieces on the Neuralsemantics server.

The e-recorder runs smoothly, loads in no time (even if you have a slow connection), and is fairly easy to use. However, you need a basic knowledge of music notations to be able to use it effectively. But if you are really interested in picking up the basics of reading musical notes, check out **www.learn2.com/09/0917/0917.asp.** This site has a good step-by-step tutorial too.

music types using the keys on your computer's keyboard. The site has five different genres of music you can choose, from techno to jazz. Just hit a few keys to create a sound or a rhythm, accompanied by animated graphics.

Each section tells you what keys to hit for orchestra loops, drum or guitar solos along with useful tips and key combinations to help you create your unique mix. While the Graphic Piano lets you mix rhythms and tracks, you can't save what you've created. A version of the Graphic Piano is also available at the Beatles Web site (www.thebeatles.com/lovemedo/treatment/), where you can create your own 'Love me do' animation.

The Nike site at http://play.nike.com/play/mix_it.jsp?cityid=4 is similar to the Graphic Piano but it also lets you record and mail your mixes to your friends.

If you're still new to the 'ebony and ivory' of the piano, then here's where you can get up close, online: http://www.pianoworld.com/fun/javapiano/javapiano.htm loads a small Java electronic piano onto your screen, which you can play by clicking on the black and white keys with your mouse, to the accompaniment of drumbeats. You can listen to a few demo tunes and also record your own.

### Hey, Mr DJ...

Want your own version of Britney's 'Oops! I did it again', in just a few minutes? You can remix popular singles released by a selected number of artists at http://www.shockwave.com. Head to the Create and Send section of the site to try your hand at the 'Mixmaker'. You'll have to download a plugin from Beatnik (www.beatnik.com) for the Mixmaker to work. Mixes created here can also be recorded and sent by e-mail.

SSEYO, a company that develops music creation tools for desktops, handhelds and the Web, has three versions of an online music mixer called FreeMixer, powered by the popular Koan Internet audio engine and Flash. Of these three versions of FreeMixer, one makes MP3s (www.sseyo.com/products/webapps/freemixer/mp31/freemixer1.html), one is a general MIDI mixer (www.sseyo.com/products/webapps/ freemixer/gm1/freemixer1.html), and the last is an XG MIDI mixer (www.sseyo.com/products/webapps/freemixer/xg1/freemixer1.html).

FreeMixer allows you to create original pieces of music that can be constructed from tiny MP3 samples, typically around 2 kb to 20 kb in size—rather like musical building blocks. Aside from using it for free, you can even put FreeMixer on your own Web site. It also has an option that lets you publish your mix online.

Some of the best online mixers can be found at www.ss7x7.com/mixers. The site has four extremely good online mixers: the Db-7x7 that only plays the SS7x7 interactive music format, the 7x7 Studio that has more tweaking options, the 7x7 Probemix that you can add on to your Web page and the Db-707 Synth, an online 3D synthesizer keyboard.

First time users can start with the basic Db-7x7 mixer, which is the easiest to use. This mixer

## A Studio in Cyberspace

Efforts at getting musicians located anywhere in the world to collaborate and work online don't just end at mixing music and jamming over the Net. Rocket Network (**www.rocketnetwork.com**), a company that develops software and services to facilitate professional audio collaboration over the Internet has teamed up with Harmony Central and EMagic to launch an online recording studio, the only one of its kind on the Net.

With the online studio, Rocket Network hopes to create a virtual workplace with powerful communication capabilities, which is cost-effective and a convenient complement to traditional studios.

To access the online studio, you need a PC or a Mac with an audio and/or MIDI interface and a Net connection. You also need to download the Logic Rocket and Rocket control, software that will enable you to use the studio online. The software is available for free at **www.harmony-central.com/rocket**. However, Logic Control will work only with Windows 95 or 98 and not with Windows 2000 or XP.

Once installed, you need to launch both Logic Rocket and Rocket Control to connect to the studio. You can use Logic Rocket to create, record and post audio and MIDI tracks to everyone in the studio, while Rocket Control lets you locate users, navigate between studios online and chat with users within studios through a Web interface.

Use the Web interface to browse through public studios or 'studio centres' such as Emagic Pro or the Musicians.com studio centre. You have a choice of about seven studio centres, which you can join on a per session basis.

You can download the project that's being worked on in a particular studio, use the audio software to create tracks, contribute your track to the project and share it with other users in the studio.

You can join any of the public studios for free but if you want a private studio and want to work with selected users and save sessions, you'll need to pay to use it.

has a library of about 49 songs that you can remix. Just load a song into the mixer from the song selector and you're ready to start. You can use your mouse as well as your keyboard to mix tracks. The controls on the mixer let you mix, mute or un-mute different elements of the song such as drums, keyboard or guitar or adjust and fade volume.

The Db-7x7 allows you to record and save your personal mix, but it doesn't record and save the music. When saving your mix, the Db-7x7 records only your slider movements and button pushes, and saves that information to a file (identifiable by the .dbm extension). You can share your mix only with other Db-7x7 users, which means that you wouldn't be able to play it on Winamp or other Media players. This is done to ensure that your mix is legal and you do not infringe any copyrights. You can either e-mail your mix or save it to the Web site's server for later use. While the Db-7x7 is great to start out with, if you need a mixer that packs more punch you should graduate to the other mixers, of which 7x7 Studio has the most control options.

Mixman's eMix (www.mixman.com/mixzone) is another popular online interactive remixer powered by the Beatnik player. Mixman has a good audio library with good quality tracks that you can remix legally. To get started with eMix, just click on a song from the library. You can listen to artist's remix or use the eMix to blend different elements of the songs to your satisfaction.

The basic eMix program lets you mix single tracks. Mixman also has software such as the Studio DL and a combination of software and audio hardware that lets you upload your own music files and mix a large number of tracks together. You can also use the Mixman audio software to play live with other musicians.

### Just jamming

There are a handful of sites that let musicians and DJs jam online no matter where they're located. Budding musicians can also use the Web as a channel to promote their music and make the Net their stage.



Record, save and share your music mix using Db-7x7



Jamming live with Livejam 797

You can use Livejam 797 (www.ss7x7.com/mixers/livejam/jamming.asp) to jam with your friends online. All it needs is a shockwave plugin for Director 7 and a high-bandwidth connection. You'll have to ensure that ports 1626 and 1627 are open for TCP/IP so that you can connect to the Livejam server. Once you connect to the server, pick a style of music and a jam partner to get going. You can use Livejam to chat and keep track of other online jammers.

You can check out another experiment with remote jamming at http://pd.klingt.org. This remote jamming software enables up to 12 users spread over the Internet to collaboratively upload and manipulate one MP3-stream in real-time. Manipulated sounds are processed on the server and streamed immediately. The interface, however, isn't too great and you would definitely need a high-bandwidth connection to be able to jam online using this client.

### The last note

While many companies are just beginning to make innovative use of applications and the Net to make music more interactive, there is a tremendous scope for developing tools that let users produce a wide range of music with almost no limit to the number of tracks they can mix online, add sound effects or voiceovers to mixes.

What's needed to help this area grow is for standards in audio technology to emerge where everyone can easily compose, mix and transfer music in formats which are compatible with the popular systems in the market today.

And of course, on the Web it's all about bandwidth, which is a limiting factor to the growth of online jamming. On a global-scale network, round-trip-delay times are too large and too variable for real interaction. Currently the focus is on creating applications that don't take ages to download, but they do compromise a bit on the audio quality.

It's difficult to predict what form interactive music will take in the future. But for now you can grab your mouse and keyboard and get ready to rock!

## Strike a *Taal* on your Keyboard

There are several sites for information on Indian music, but you can't really compose or remix Indian music online. However, there is software available that you can download and use to compose and mix Indian music.

**www.swarsystems.com**, which specialises in developing Indian music software, has two packages, SwarShala and TaalTrax.

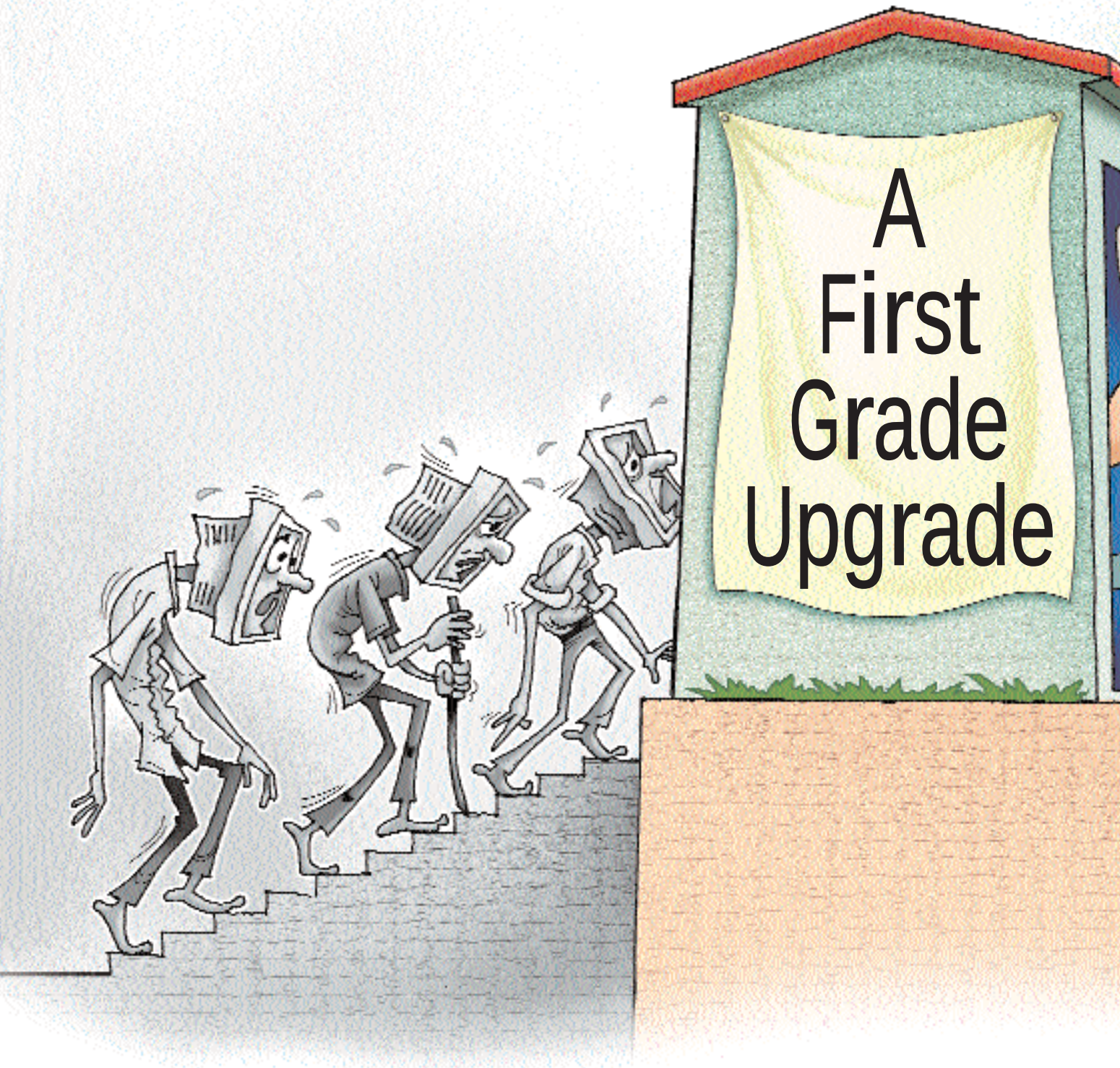
SwarShala is an Indian music sequencer that covers both the melodic and rhythmic aspects of Indian music—*raag* and *taal*. The software, which runs on Windows 95/98/Me/2000 or Windows NT, comes packaged with five RaagWizard and TaalWizard bases and associated sound samples. Each base features a specific instrument and contains different musical sequences.

You can use SwarShala to create ragas or even add Indian music sequences and beats to create fusion music. It can also be used to create Wave and MIDI files. TaalTrax enables you to create realistic tracks of almost eight Indian instruments.

TaalMala (you can get it at **www.taalmala.com**) is a Windows-based Tabla accompaniment software for music enthusiasts and professionals, which can be used to construct and play almost any Taal on your keyboard.

You can download and try out the demo versions of SwarShala, Taaltrax and TaalMala but you would have to register the software and obtain the license in order to use its complete features.

# A First Grade Upgrade



Soup up your old faithful and get it running as good as a spanking new machine

ANIL PATRICK R.

Does your PC move like it's on the last lap of a marathon? Wheezing and puffing like an overweight 60-year-old even while running the lightest of applications? Has installing those sought-after packages become a real pain because of the regular stream of 'insufficient system resource' messages? Well, fear not, for an upgrade should make life easier. But before we head down that path, let's take a look at certain issues that you need to keep in mind.

**The right time?**

The answer to this question is yes. At this point of time, hardware prices are at an all time low. For those of you looking to upgrade, this is the time to get hold of all the goodies you need, or at least most of them.

Consider the fact that today you can buy a bomb of a PC for about Rs 35,000. This would be a PC with a 1.4 GHz Pentium 4 processor, 40 GB hard disk, 128 MB RDRAM and so on, which was priced over Rs 50,000 a couple of months

**Illustration:** Mahesh Benkar



back. Consider it the upside of the industry being down. But this doesn't mean that you have to go out and buy a PC. The idea is that wth a few upgrades you can make your PC as healthy as ever, as good as any new PC.

However, if your PC's configuration is way too old or your applications demand more power than can ever be achieved from upgrades, then you would have no choice but to buy a new one. Take a look at the side bar: Is a new PC better? before you make a decision.

We'll consider the configurations which call for a completely new PC further on in the article. Now let's see why it sometimes makes sense to boost your existing machine than go in for the latest PC.

In the current market situation, it may be better to wait and watch as there is a lot of ambiguity as far as the different platforms for processors are concerned. It seems almost every other day some major chip manufacturer comes up with a new chip architecture that requires a

## Is a new PC better?

Ah, the all-important question! What you need to consider here first are the kinds of applications you use. If you use your system simply for working in Word or spreadsheets, you don't really need an upgrade as your present configuration ought to be enough.

However, you would need an upgrade, or a brand new PC, if you want to run the latest applications. Recent applications like Photoshop 6 demand greater system resources. So first decide on the applications you want to run, and then come down to the configuration.

If your present PC configuration is anything lesser than a Pentium II 233 MHz, don't bother upgrading. It is cheaper and easier to get a new PC. The reason is that most of the components like EDO RAM needed for upgrading these systems are hard to find in the market. And even if you do find components, they are likely to be second-hand and overly priced. Systems below the P-II 233 MHz mark cannot be upgraded beyond a certain level, thus limiting the potential for one more upgrade in the future.

In this case also, the minimum configuration worth upgrading depends on the applications you run. For example, Pratik Shah, a Mumbai-based graphics designer, recommends a P-III 550 with 128 MB RAM and a 15-inch monitor as the minimum configuration worth upgrading—from a designer's point of view, of course.

## Golden Upgrade Rules

This may be hard to believe but it's true. The first rule of upgrading is to keep the amount of upgrading as less as possible. Let's say that you need faster performance from your PC. An increase in RAM ought to do the trick. For example, if your present memory is 64 MB, an increase to 128 MB or 256 MB should do wonders to the way your PC runs applications.

The second rule is to ensure that the stuff you buy is compatible with your present PC. Make sure you get the manuals with the components while buying them.

Third rule of upgrading is to buy stuff which you can upgrade later on. But since not all of us have the cash for a new PC every two years, we might have to spend a little extra here.

The fourth rule may sound like a contradiction to what's mentioned earlier: don't ever let the performance of a single software application determine how efficient your upgrade has been. While upgrading, look for an overall improvement in performance rather than the performance of each individual application.

And last but not the least, you should have a general idea of the latest hardware prices as well as know enough about hardware so as to not be fooled by the sugar-coated tongues of dealers and vendors. Many hardware sellers are in the habit of making you buy things that you don't really need. Being forewarned is being armed.

motherboard with a different interface. Until the day chip manufacturers decide to settle on a reasonable standard where an upgrade over a wide range of speeds is possible over time, this is going to be a difficult choice to make.

What should prove more lucrative is the varied choice available in the hardware market today. Take, for instance, the example of motherboards. A couple of years back, you could choose from only two levels—an entry-level motherboard with the most basic features to a lesser-known brand or a big brand with all the advanced features. But now, buyers have an exhaustive array to choose from and finding the right features at the price is not a problem.

The same kind of variety is available for several hardware component categories. It is more or less up to you to make use of this choice offered in the market and turbo-charge your PC.

### Cram RAM

If your PC seems a bit of a laggard lately and keeps popping messages that the system is dangerously low on virtual memory, then you need to upgrade your RAM. RAM is one of the easiest and cheapest components to upgrade, and this is not just because the prices seem to be dropping every day.

Today, a 128 MB SDRAM module would cost you around Rs 850 and chances are the prices would go down even further. Installing additional RAM is as easy as this: just slide in the RAM module and boot your PC. The memory check at bootup will show the enhanced memory details. Pratik Shah, a professional graphics designer from Mumbai who recently upgraded his PC's RAM says, "I upgraded the RAM on my PC from 128 MB to 256 MB and installed a CD-RW drive. The entire process barely took 15 to 20 minutes".



"Before you get a RAM module from the market, check whether your motherboard has empty slots for it. Also check the maximum memory capacity module a slot can take"

Paul Vincent

Software engineer, SRA Systems, Chennai

We asked Paul Vincent, a software engineer with SRA Systems, Chennai and an old hand at upgrading, about what to look out for when adding more RAM. His advice: "Before you get a RAM module from the market, check whether your motherboard has empty slots for it. In addition to this, check the maximum memory capacity module a slot can take, especially in the case of old motherboards."

It's possible to use PC133 SDRAM with older PC100/66 compatible motherboards as these memory modules are backward compatible. Installing additional RAM is cheap, easy, and does wonders to your system's performance.

### More space, please

We all need space in life. Since you are upgrading, you might as well give your PC some extra storage space by putting in a new hard disk. After all, you need to put those MP3s and videos somewhere.

A hard disk upgrade would be in order if you've been getting a lot of 'out of disk space' messages. But before you step out to buy a new hard disk, Paul suggests you try out these small techniques to see if you really need it.

First, run the Disk Cleanup utility available in Windows to clean all the temporary files that clog your hard disk. The next step is to uninstall all extra programs you don't need. Then check if you're using the ancient FAT16 file system. You can do this by right-clicking on the drive and reading the information in the Properties tab. If you're using Windows 98, convert the file system into FAT32, which is more efficient in space usage by using the Drive Conversion Wizard available in Accessories>System tools>Drive Converter. In case you use or plan to use Windows NT/ 2000/XP, you might want to switch to NTFS (NT File System). Converting FAT16 to these advanced file systems ought to give you more free disk space than plain old FAT16. This should take care of your storage needs in case you don't store heavy files like MP3s and movies.

But if that doesn't work and you still need to fit more data, then you need a new hard disk. This would be the case if your hard disk is just 2.1 to 4.3 GB in size. Remember that you can club your old and new hard disks together.

There are some terms that you need to be aware of when going in for a new hard disk drive (HDD). After size, which is the most important and measured in Gigabytes (GB), you also need

to pay attention to rotations per minute (rpm), which tells you how fast the hard disk is rotating. The higher the rpm, the faster the data transfer and the PC's operating speed. Another thing you need to look for is the sustained transfer rate of the drive. Measured in Megabytes per second (MBps), the higher the number, the faster is the disk operation.

Though most drives run at 5,400 rpm, some of the faster and commonly available hard disks run at 7,200 rpm, while there are others which run at 10,000 rpm and higher. Some of the popular hard disks available in the market are 30 GB HDDs running at 7,200 RPM and 40 GB HDDs running at 5,400 rpm. These drives are available for less than Rs 7,000 and the prices are expected to fall further.



"I upgraded the RAM on my PC from 128 MB to 256 MB and installed a CD-RW drive. The entire process took 15 to 20 minutes"

Pratik Shah

Graphics designer

### Go for video

Next on the upgrade chart is the video card. If you are one of those avid gamer types, then this is a part that you need to upgrade on a regular basis. For lesser mortals, a video card upgrade wouldn't be that frequent.

If your video card still has less than 8 MB of video RAM, it's definitely worth upgrading to a 16 MB TNT card or higher. This should end up costing you around Rs 3,000 and will give you significantly improved performance with newer Operating Systems like the Windows XP.

In a graphics card, the main features you should be looking out for are 3D acceleration and TV input/output. However, if you are not an avid gamer with lots of money to spend, upgrading to a video card in the higher spectrum would be pointless.

### Size matters

You could probably consider upgrading your monitor if you're tired of the 14-inch screen. You can get a 17-inch monitor at a decent price of Rs 12,000. The prices of bigger monitors like 19-inch and 21-inch have also come down. You should opt for them if you watch a lot of movies and your budget permits it. Graphics designers will obviously welcome a better reproduction of their art on these monitors. If you're lucky, you could also get a buyback deal which would give you a decent value for your existing monitor.

### Processor-motherboard combo

In many cases upgrading to the latest processor might not be feasible because it would involve purchasing a new motherboard. However, if you use a 440BX/ZX based socket 370 motherboard with 100 MHz FSB (Front Side Bus) support and can get your hands on a Pentium III 800 MHz processor, this is a good idea.

In most cases where you have an old 500 MHz or lower processor, using a Slot 1 or Slot A interface might not make as much sense as getting yourself a new PC. This is because a motherboard upgrade coupled with the cost of the processor would end up being pretty expensive anyway.

### Write and read more

Another upgrade option you might want to consider is replacing your low speed CD-ROM drive with a model that is faster. Better still, you could go in for a CD-RW or DVD-ROM drive, both of which are quite reasonably priced nowadays.

Getting hold of a faster CD-ROM drive is worth it if you're still working with an 8x CD-ROM drive or something of that order. And if you've made CD writing your new hobby, replacing your old CD-ROM with a CD-RW is a good idea for burning all those MP3s you've been collecting.

For movie buffs with access to DVDs, a DVD-ROM drive would be a nice option. However, you should be aware that while you could get one of these for as little as Rs 5,500, you could face problems due to DVD region coding.

### Get her grooving

And there you go! That's all there is to upgrading your PC. Giving your darling machine a boost in its performance is always a good deed and all you need to do is ensure is that you upgrade as per your performance requirements. Can't wait to hear your machine start purring again, can you?

## Watch out for this

As in the case with most maintenance operations, upgrading a PC also involves taking some necessary safety measures.

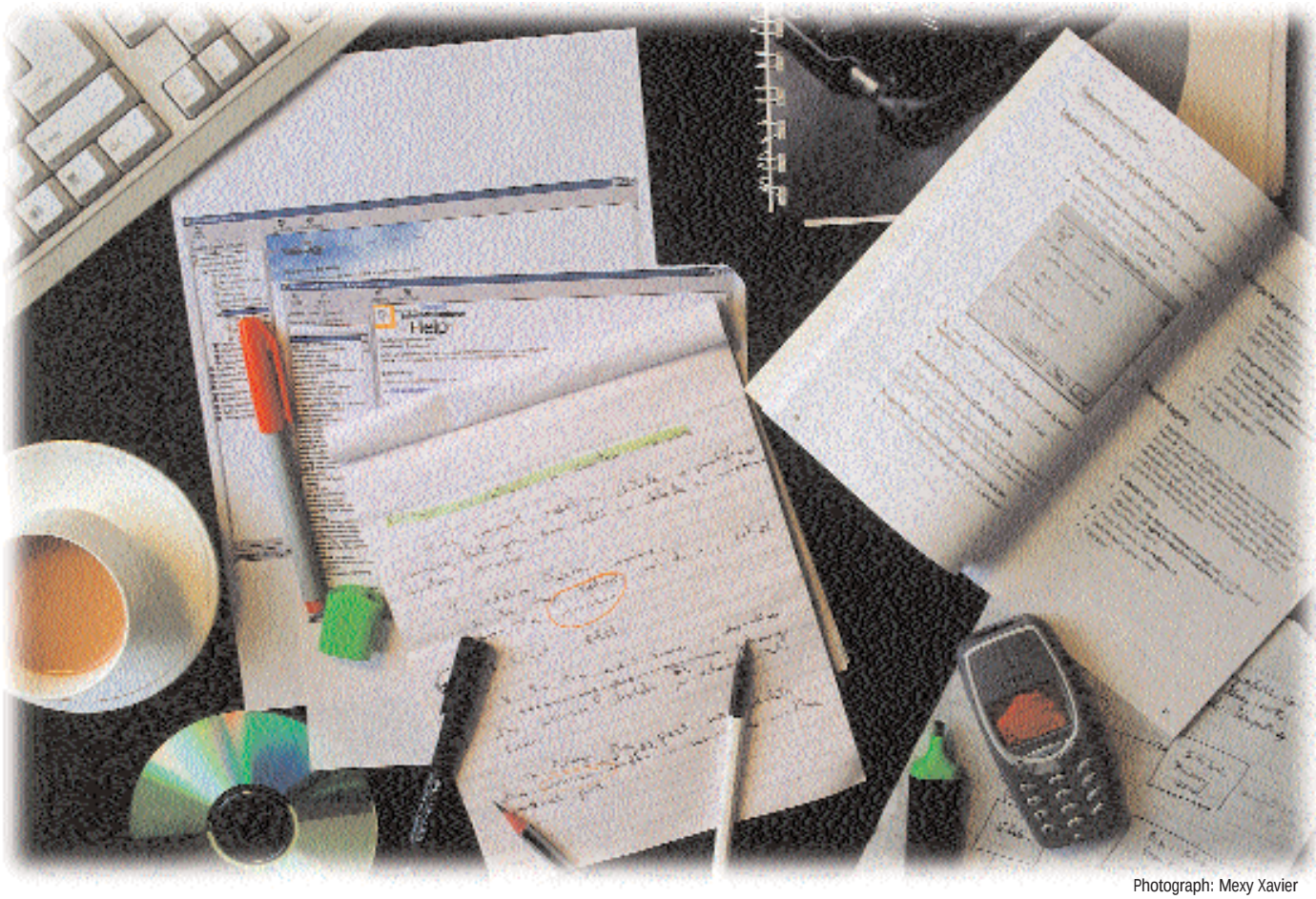
If this is the first time you are upgrading your PC, do not attempt to do it all by yourself. Make sure you have an experienced person supervising while you do it. Otherwise, the next best thing is to get the upgrades done by a hardware engineer.

However, if you have decided on doing the upgrade yourself, here's what you should watch out for:

- Make sure you get rid of static charges by touching the bare (non-powder coated) surface of your metal cabinet.
- Handle most of the card components such as RAM, motherboard, soundcard, etc by their edges. This will ensure that the card does not get damaged due to static electrical charges built up in it.
- Done with the installs? Check that all the connectors and cards are in place. There should be no loose contacts anywhere in the system.

Finally, switch on the PC. If everything's been done right, you should hear a short, single beep. If the system hangs, it could be due to incorrect motherboard settings or loose cards. Check these out thoroughly and rectify the faults before you go any further.

# A write job for techies



Photograph: Mexy Xavier

What can be the perfect job for a person who loves technology, and writing even more?

Clue: It's not a rocket scientist

ANIL PATRICK R.

Do your skill sets lie in explaining how to best utilise technology? Do spelling and grammatical mistakes stare out at you from a page, begging to be corrected? Do your friends know you as the 'communicator'? Do you have that special knack for everything technology, but still hate the routine that the job involves? If your answers are mostly yes, then you should perhaps evaluate the option of becoming a technical writer.

The general opinion of writing as a means of livelihood is that it simply doesn't pay enough. Well, it's not so with technical writing. It pays, and it pays well. If you love technology and can express yourself well, this could be the next dream job you were waiting for.

**What is technical writing?**

All of us are familiar with the information manuals that come with appliances like TVs, computers, etc. Most of us use Help files in software programs such as Word or Windows. Ever wondered who makes these manuals and help files? All this is the work of the behind-the-scene wizard, better known as a technical writer.

The first question that comes to you might be this: Is a technical writer the engineer who designs the technology and one who knows everything about it? The answer is no. A technical writer is a specialist in documentation work and is highly skilled in all areas of document design and publication. He is not a geek and he need not be an engineer. What he does best is simplify and explain technology to the end users and target audiences.

At best, a technical writer can be defined as someone who teaches complex ideas to others using the written word. Sajitha Jayaprakash, a technical writer working with Fluent India, has this perception: "A technical writer compiles information of a technical nature and puts it in a language and format that can be easily understood by the readers who are unfamiliar with that technology".

The most imperative thing for any technical

writer is to first understand the user whom he is writing for. Usually, the manual is directed towards a narrow and specific audience segment which needs to know more about a product. It is quite obvious from this that technical writing needs to be clear, accurate, easily understandable, and concise.

There are four stages you need to know before your technical writing career can blossom.

### Stage one: How to become one

So how does an aspiring individual with a technical bent of mind and a good grasp over English language become a technical writer? What are the qualifications required? Factually speaking, there is nothing like a fixed basic qualification for a technical writer. Although companies may ask for a degree in science or a post graduate degree in English, what they are really looking for is an ability to understand and interpret



A technical writer compiles information of a technical nature and puts it in a language and format that can be easily understood by the readers who are unfamiliar with that technology

Sajitha Jayaprakash
Technical writer, Fluent India

technology, and explain that in the best and fewest words possible.

A potential technical writer needs just three things: fair amount of technical skills, an excellent command over the language, and a wide-ranging interest in technology. According to Jayaprakash, the most important qualifications of a technical writer are a "sound knowledge of language and the ability to grasp information".

A good command over the English language means knowledge of grammar, an impressive vocabulary, the ability to maintain verbal consistency, structure and style, and so on. Of course, an abiding passion for reading always helps.

Sowmya N, another technical writer with Polaris software, Chennai, feels that the background is not important. "Whatever be the background, the output can be tuned to the desired fit as long you are technically *au fait* and have the willingness to admit ignorance where you lack".

Technology is not bound by time. New technologies are emerging by the hour and the passion for technology will determine the time a technical writer spends in learning and understanding the latest technologies. A technical background would be helpful in this context.

"Successful writing on the job is not the product of inspiration, nor is it merely the spoken word converted to print. It is the result of knowing how to structure information in words and in visual design so that the writer achieves the intended purpose," speaks Sowmya out of experience.

Good interviewing and interpersonal skills are attributes which will take you a long way in the technical writing field. These skills are necessary because you will be required to interact with a lot of employees from small and medium enterprises (SMEs) such as programmers, engineers, managers, and the lot. It would be helpful if you have an awareness of logical development and assumptions, especially if you are planning to do documentation of software.

### Stage two: What do they want?

You need to have a good working knowledge of the tools used for technical writing such as word processing, desktop publishing and online authoring applications. When it comes to word processors, there's nothing better than Microsoft Word. You would also be required to know how to use tables, styles as well as the illustrations in Microsoft Word. One of the most commonly used desktop publishing tools for technical writing is Adobe FrameMaker. You need to have a good working knowledge of online authoring applications for creating help systems. The most favoured online authoring applications are eHelp's RoboHelp and ForeFront's ForeHelp. Knowing one of these applications well will

## What do Technical Writers do?

Some of the major types of documentation done by technical writers are:

- User's manuals
- Online systems like Web sites and help files
- Multimedia development
- Reference manuals
- Documentation of product development and design

These are just some of the job functions that a technical writer may have to handle.

## Crossing over

Do you think your calling is technical writing rather than your current job? You might have a point there especially if you belong to one of the so-called 'related fields' of technical writing. Some of these fields are programming, teaching and journalism.

Programmers generally make good technical writers. This is mainly due to the fact that their background helps when it comes to understanding the technology involved, especially in writing technical manuals for software applications. Furthermore, technical writers with a programming background are able to get along better with other programmers in SMEs. They tend to view the programmer-turned-technical-writer as a part of the same gang.

A teacher fits the technical writer's profile well too. This profession has its own unique advantages when looked at from a technical writer's point of view. First of all, a teacher has the advantage of being a good communicator with excellent interpersonal skills. Secondly, he or she understands the subject well. These two factors help a teacher a great deal while trying to get a job in this field.

Another breed of professionals who can become good technical writers are journalists. They have already proven their writing skills and versatility with the language. All they need is a technical bent of mind.

## Preparing your First Resume

'First impression is the last impression'. This oft-repeated saying is very true when a prospective employer opens your CV for the first time. A well-written and well-formatted resume is leagues ahead of a poorly formatted, badly written one. Make sure you present yourself well.

Know that your resume is you. If it contains spelling and grammar mistakes, it automatically means you don't know any better. After all, you are applying for a career in technical writing. Check and double-check (and one more time, if possible) before you send your applications anywhere.

Don't ever be too wordy or verbose in your presentation of yourself. Vanity kills and your resume in not your autobiography. One of the basic qualities of a technical writer is to be clear and concise when expressing something—apply this principle to perfection in your CV. And please don't overdo anything.

A word to people with previous working experience looking to switch over: Since you have experience, mention the type of work you've been doing. Also mention previous experience with writing, if any, and the tools and software you are familiar with, besides the number of years you've put in your previous jobs.

work towards your advantage. RoboHelp is more widely used than ForeHelp and is more in demand. Knowledge of Microsoft FrontPage will also prove to be advantageous.

Thinking of shifting already? Wait a second and take a look at the remaining points to get an idea of how to make a seamless career switch.

**Stage three: The educational aspect**

There are several universities abroad that offer graduate and higher-level courses in technical writing. However, our country boasts of no such universities or courses. Private institutions such as Technowrites in Pune and Deldot systems in Bangalore offer certified courses in technical writing. Indian National Scientific Documentation Centre (INSDOC) in New Delhi also offers courses in documentation.



Successful technical writing is the result of knowing how to structure information in words and in visual design

Sowmya N.

Technical writer, Polaris software, Chennai

What is the best way to learn more about your job? Read more books! Utilise the Internet and visit forums where you can learn more from other's experiences.

## Are you Hiding a Writer?

Check list to find out if there is a technical writer hidden inside you:

- Can you reduce complex technology to simple logic for others to understand?
- Do you get overly affected by spelling mistakes and grammatical bloopers?
- Can you scan a large, uninteresting product brochure in five minutes for the meaningful?
- Is having a discussion on technology your idea of a perfect evening?
- Do you look for the Science and Technology page of the newspaper before the headlines?

If you've answered yes to at least three of these questions, there is a budding technical writer inside you. Nurture him. And fix him a date with other technical writers in your colony.

**Stage four: The first job**

Let us be blunt and frank about this. The first technical writing job is difficult to get. This is primarily due to the fact that many Indian companies prefer people with experience. You need to prove that you can write, and that you understand technology, more than anything else.

Savita, a technical writer at eVector solutions, has some expert advice for those hunting for their first jobs. "Watch out for job postings in the twin-india.org site/newspapers. You can subscribe to the TWIN list by sending a mail to twin@user.itconsult.co.uk. For the first job you need to show your writing skills as well as the ability to understand technology. The best way is to send some samples of your writings. Most companies have their own standard interview/test patterns which include a test of English language, technical tests, and so on".

Remember: The lesser a company has to spend on your training, the sooner it will hire you. If you are language-savvy and already know the various Word processing tools, consider the job half done.

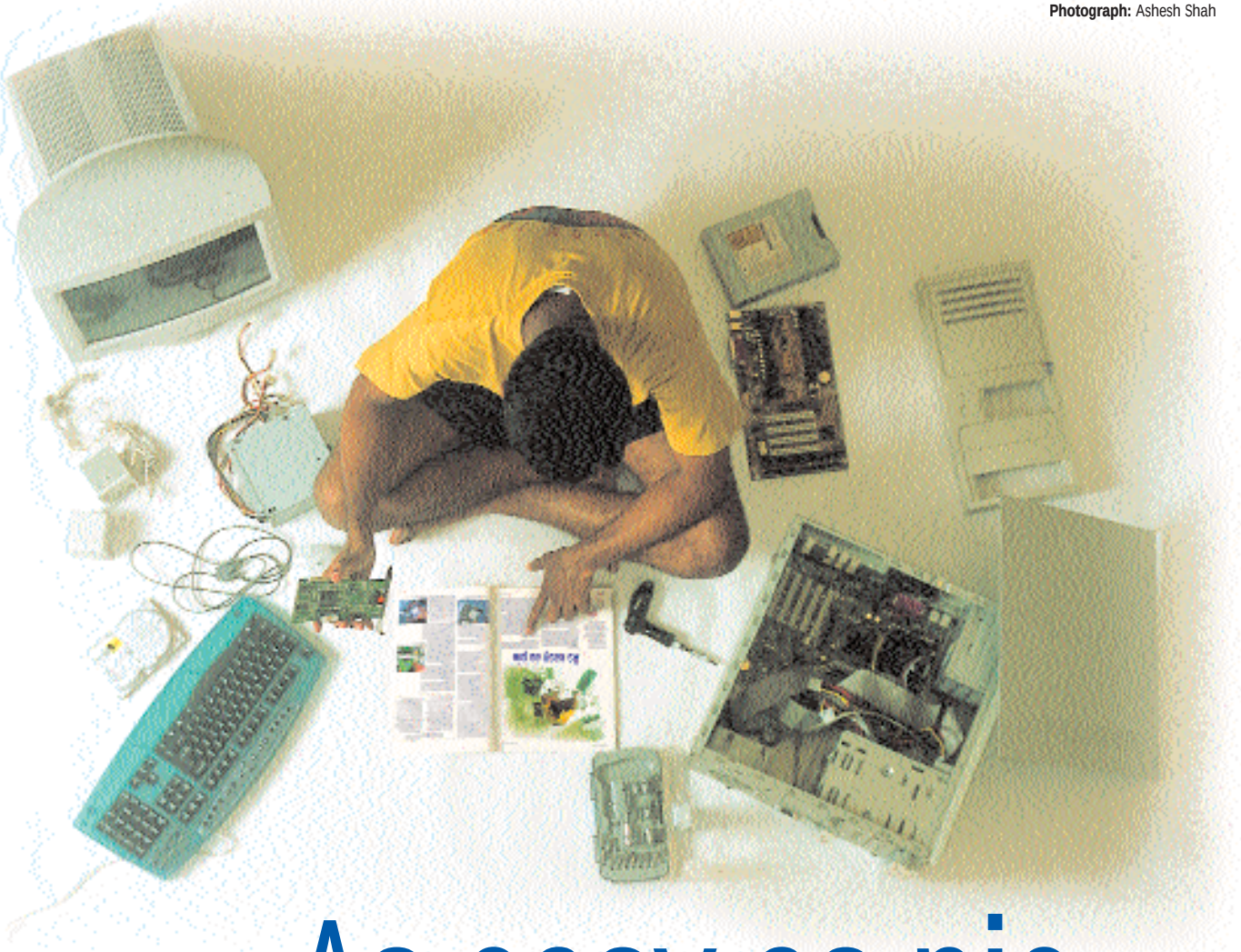
Prospective employers often ask for a sample of your technical writing. If you do not have a sample, make one. This will give you a good idea of what the job involves as well as an insight into the various factors (and difficulties) involved in technical writing. "Try to find a short, badly written manual and re-write it. Then have the original and the re-written manual as the proof to your abilities"—this is Sajitha's suggestion. If you are attempting this,take the original with you for the interview so that the interviewer gets to see the difference.

To know what the technical writing process consists of, remember the acronym POWER, which stands for Planning, Organising, Writing, Editing and Revising. Follow these five steps diligently while working on your first written work to get a professional result. How soon you get a job would depend on how well you write.

You can also join an organisation as an intern. This will help you make contacts in the field and gain valuable experiences at the same time. Usually, companies recruit interns who show aptitude in becoming good technical writers.

It wouldn't be wrong to presume that you are interested in a career in technical writing if you've read this far. Try this option. It gives you a chance to write, to be creative and to do what you love doing the most: bringing technology closer to the masses.

Photograph: Ashesh Shah



# As easy as pie

Tired of all the run-of-the-mill configurations? Here's how you can piece together the right components and build a PC that suits your style

Find it on digit interactive

**Video workshop** on Know your PC's Back Panel. Check out **Mindware**

YATISH SUVARNA

With prices of components fast falling in the computer industry, this is certainly a good time to either upgrade your PC or buy a fully-loaded branded machine. But if the textbook configurations offered don't excite you, and if tinkering with hardware is in your blood, you could build one for yourself exactly the way you like it.

But before you bring out the screwdriver and get elbow-deep into putting your dream machine together, here are a few things that you should consider.

If you buy a branded PC, you are shielded from some of the hassles and risks, at least for a year or so by the after sales service and repair support that companies provide. But if you prefer the do-it-yourself way and problems crop up after you have assembled your machine, the only person you can bank on for troubleshooting is yourself. You will have to go around hunting to find a replacement for the damaged component and you'll have to fix all the bugs yourself. Take the plunge only if you are confident that you can handle any hassles that crop up after you've built your dream machine.

## The nuts and bolts

You should possess a good understanding of the market, only then will you be able to acquire the right components at the right prices. The market right now is vibrant with prices changing almost every week. Therefore, to get a fair idea of a component's price and reliability, check it out with different dealers. Don't ever walk out and buy components on a whim. Spend a reasonable amount of time doing some research on the products that you intend to buy.

You can buy components either from a retailer or from the grey market. If you decide to buy from a retailer, chances are that the components will be priced higher than in smaller outlets or in the grey market, because here you are provided with a warranty. Your next choice is that

cramped little shop that probably doesn't even have a name board outside. But shops like these stock most of the hardware and the prices too are often lower than those in the large retail shops. The final, and probably the most popular place to buy your hardware, is the grey market. Here you will find every component you need at prices that are at least 20 per cent lower than what is offered in retail outlets. But buy at your own risk, for the components will not have any warranty and the product might not come with any documentation. Choose this option only if you have enough knowledge of computer hardware or else you could end up with spurious or substandard components.

When is the right time to buy? That depends on how long you can wait. On the processor front, AMD is a great buy because it offers a performance that is very good at its price. However, Intel is all set to change that. You can now purchase a 1.8 GHz P4 for Rs 12,000, whereas a 1.4 GHz AMD Athlon processor (which is similar in performance to the 1.8 GHz P4) is available for Rs 9,500. After the change in prices the Intel processor seems a better buy because it can be overclocked far more than the AMD without getting overheated.

You also have plenty of choices in motherboards—you can choose from among at least five motherboard brands for every processor. As for hard disks, 10 GB is nothing these days; you can now have an entry-level hard drive with a capacity of 20 GB priced as low as Rs 4,500. RAM prices have fallen to an all time low of Rs 1,500 for 256 MB and everyone is cashing in on this by packing their system to the gills with truckloads of RAM.

## How about an Assembled PC?

Some of you who are a little hesitant about building your own machine, and not wanting to buy a branded PC either, often go in for an assembled one. There are several self-proclaimed assemblers who will build a PC on the basis of the configuration you give them. You can get your PC in a week's time and you will have to pay some extra charge for assembling. Seems good, doesn't it? But consider this. If you don't have any knowledge on the hardware front, there are chances that the assembler might take you for a ride by giving you, for instance, a skimpy 4 MB SiS card, which will not let you play high-end 3D games. Often the one-year warranty on servicing and replacement of components is not honoured promptly enough. You may have to make a number of phone calls for weeks on end to get any sort of remedy to your problems. More importantly, the software that these assemblers provide are usually pirated—no licensed ones here. So you could get caught for using pirated software while the assembler gives you the slip.

### Elbow grease

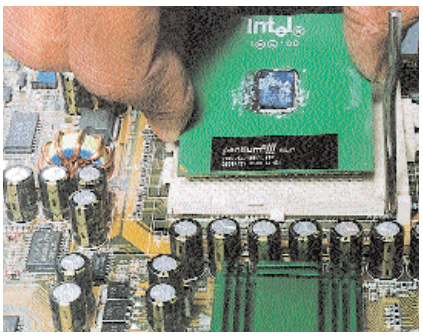
After you've got all your hardware together, pick up a screwdriver set and get ready to set up your brand new system.

**Connecting the motherboard:** Get rid of any static charges by touching the plain body of the cabinet. Remove the back panel from the cabinet, and mount the motherboard onto it. See that it is correctly aligned with the panel. To avoid short circuits, make sure that there is no direct contact between the motherboard and the panel. Take care to see that the washers have been properly attached between the motherboard and the metal panel.



Remove the back panel from the cabinet and connect the motherboard to the panel

**Connecting the processor:** Now, connect the processor to the motherboard. Processors currently available come with a socket 370 interface (for the Pentium III and the Celeron), a socket 423/478 interface (for the Pentium 4), or a socket A interface (for the Athlon/Duron).




Mounting the processor the motherboard

The socket interface is one of the most common interfaces available today. It is somewhat rectangular in shape and has a lever on its side, which must be lifted to open it. Every processor has a small indication as to the manner in which it is to be placed on the motherboard. On most processors, you will find a marking on the corner in a particular shape and a complementary mark on the motherboard socket. Insert the processor according to the mark and push the lever down. Do not force the processor into the socket as this might damage the pins and render the processor useless. You will sense some resistance on the lever while closing it, but this is normal and once closed, it will hold the processor in place.

**Attaching heat sink and fan (for socket interface processors):** You will have to attach the heat sink and fan to the processor to keep the processor's temperature under control. You need to apply some thermal paste on the processor's surface and some on the heat sink too. Once this is done, gently place the heat sink over the processor taking care that there are no air bubbles between the processor and the heat sink because if the contact is poor, it might heat the



Attach the heat sink to the processor



Apply a thin film of thermal paste to the heat sink

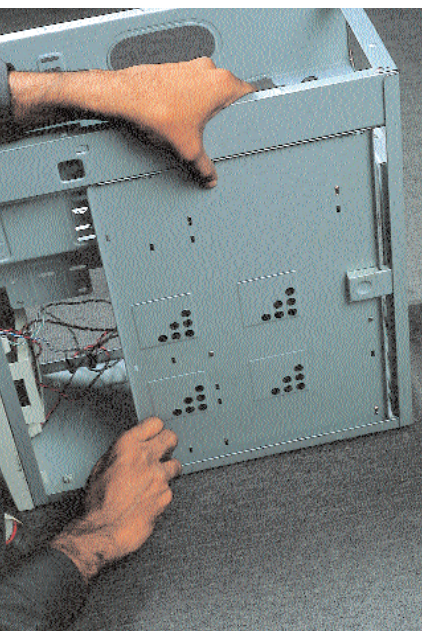
processor. Push the clips provided on the heat sink into place on the motherboard until it gets locked. Double-check this procedure because if this is done wrong, you might end up with a fried processor.

**Installing RAM:** Align the memory modules along the slots provided on the motherboard. The modules go in only one way so this is a simple step to execute. Press the modules until the side levers lock them.

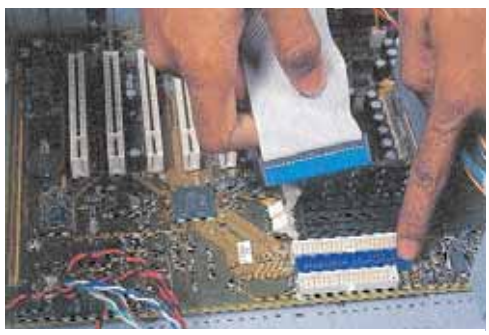


**Mounting the motherboard to the case:** Now align the back panel to the side of the cabinet and screw the motherboard back onto the cabinet. Don't forget to keep your motherboard manual beside you so you can refer to it in case of any problems.

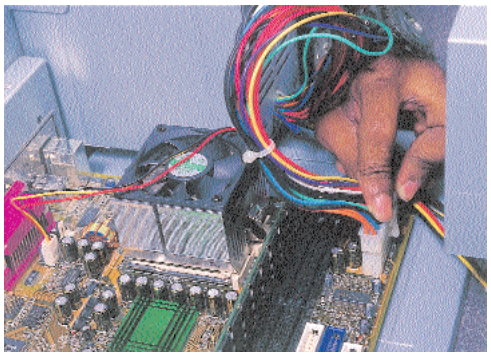
**Connecting power and data cables:** Now connect all the drives, including the hard drive and floppy drives to the motherboard using the IDE cables. Connect the hard drive cable to the Primary IDE slot on the motherboard. The IDE slot is usually a long two-pin wide slot. You can connect the CD drive and the other drives to the other cable. A similar smaller slot is available for the floppy drive. Connect the main power cable, which runs from the SMPS to the motherboard. While fixing up the power supply, make sure that the motherboard has support for the AT or ATX power supply. Connect the proper cable to the motherboard. Also remember to connect the cabinet buttons and the internal speakers to the



Mount the motherboard back to the case



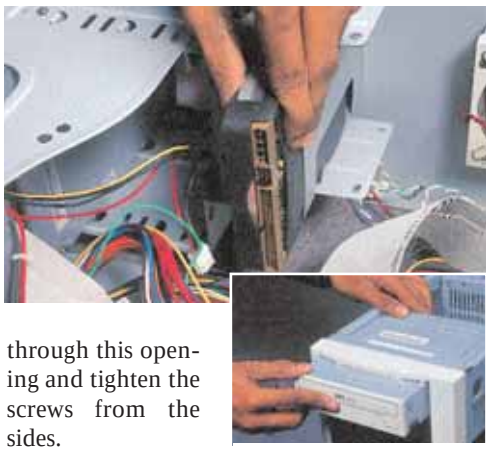
Connect the hard drive cable to the primary IDE slot



Install the power supply. Connect the main power cable to the motherboard

motherboard using the fine cables. Refer the motherboard's manual to ensure that the right cable goes to the right pins on the motherboard.

**Connecting the hard drive and the CD-ROM drive:** Place the hard drive in the space provided in the cabinet and firmly screw it to the side panel. For the CD-ROM drive you will find an opening in the front of the cabinet. Insert it



Mount the hard drive; Inset: mount the CD-ROM drive

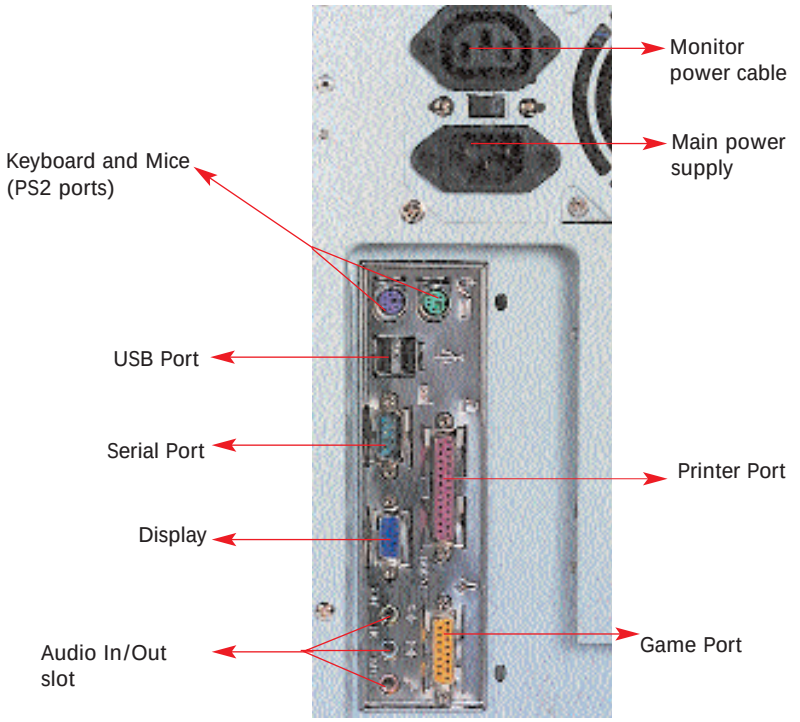
through this opening and tighten the screws from the sides.

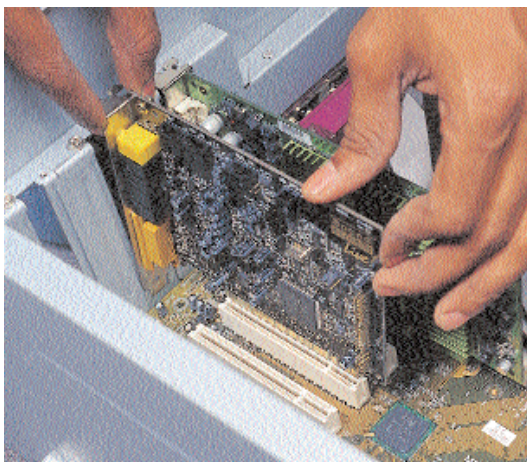
**Connecting the data cables to the drives:** Now connect the data cables provided with the drives. The right way of doing it is indicated in the screenshot.



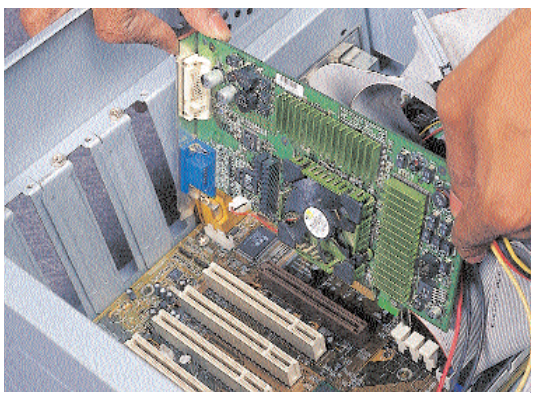
Make sure the conductor of the IDE cable which is coloured red is adjacent to the power connector

## The Right Connection



Installing the soundcard into an empty PCI slot



Installing the AGP card

**Attaching the display card and the soundcard:** The display card you buy should be a decent AGP accelerator of the TNT2 class. An AGP slot is usually a small brown-coloured slot and an AGP Pro slot is slightly longer. Gently insert the AGP 3D accelerator card in the slot until it is firmly fixed to the slot and fasten it with the screws provided at the outer end of the card. Do not try to force it on or you may damage your card.

Insert the soundcard to an empty PCI slot. This is a white slot. Insert the soundcard and follow the same procedure as you did for the 3D accelerator card. So also for any kind of LAN or modem cards that you might be fixing on the motherboard.

**Connecting the monitor/keyboard/mouse:** You will find two cables running from the monitor: one goes to the display card, has a connector at the end and sports a 15-pin interface.

## Pr Rating on AMD Processors

AMD is going to market its newer desktop series of processors using Pr ratings (Performance Ratings). This is being done because clock frequency (measured in MHz) is no longer considered an accurate measure of CPU performance. Pr ratings use a system wherein a standard set of configuration and benchmarks are used to evaluate system performance so as to get a real-world measure of performance. For example, an AMD Athlon 1.33 GHz processor wil be badged as an Athlon 1500+ processor. This indicates that the Athlon 1500+ has a performance equivalent to a Pentium 4 1.5 GHz processor.

The other cable goes to the power supply and has a three-pin interface. Connect these cables to their respective sockets. Next, connect the keyboard and mouse to the PS2 ports of the computer. If you are using a USB input device, you will have to connect it to the USB interface provided on the motherboard.

**Setting up CMOS**

Before doing this, check if all the components are in place and there are no loose screws lying in the system. Just before you power your machine, make sure that the DIP switches on



The first Boot

your system are configured properly to allow changing of settings through the CMOS itself. Switch on your computer and check if the power LED lights up. Check if the processor fan is spinning and listen to the number of beeps. These beeps will help you identify problems in the system. Refer to the motherboard manual for the number and duration of these beeps to analyse the problem such as loose connections and others. Next, make your floppy or CD-ROM drive bootable so you can boot using your CD-ROM drive and start your operating system setup.

Imaging: Ram



# A pretty palm for sore eyes

Try some of these trendy and useful application launchers and say bye-bye to everything old and long and dreary

ANIL PATRICK R.

'Boring', 'monotonous', 'ho-hum'…if these are the words that come to your mind when asked to describe the look and feel of your PDA, then it's time to take a look at application launchers and what they can do for you.

Each application launcher has its own set of goodies. But broadly speaking, all of them allow you access to applications you need with the help of one-tap buttons or shortcuts. Besides, you get added functionality and can modify the look and feel of your PDA completely using your own icons and themes.

So let's see how you can talk to your PDA the way you want to and add more funky functionality to that cute thing nestled in your palm.

## Silver your screen

SilverScreen provides an easy-to-use, tabbed interface where you can access almost all that you need with a single tap. It has the drag-and-drop facility, which lets you beam, categorise, delete, and perform other functions. In addition to this, SilverScreen also helps you brighten and adjust the grey settings or colour tones on your Palm.

A tap on the Silver icon in the main menu turns on the application launcher. Tapping on the tab at the bottom-right of the screen brings up the pop-up Toolbox. The Toolbox has buttons for device information, category, beam and trash bin. This is useful when you need to have all the information at your fingertips or need to beam something in a hurry. The battery icon on top, called the Battery Meter, gives you the power status such as charge left, voltage, memory, and so on. But that's not all. If you click on the arrow at the bottom-right of the screen, you get category tabs instead of the pop-up Toolbox. The time tab at the top-left corner can be set to show the date or day as well, while the curved arrow

## Launchpad

An application launcher can be thought of as a 'shell' for the OS. Most of us have seen the shell replacements that can be done on a Windows OS—the appearance as well as the user interface of the OS can be changed using these shell replacements. An application launcher for PDAs does the same thing.

A common feature available in most application launchers is the ability to change your Palm theme. Most launchers offer additional downloadable themes. In addition to this, some allow icon sets to be downloaded so that you can choose the icon to be used for each application. This is a neat feature since most themes do not allow selective changing of icons.

Drag-and-drop of applications—something the Palm does not offer as a standard feature—is available in almost all application launchers. This feature lets you simply drag-and-drop applications for beaming, deleting, information, and so on. Yet another very useful feature is the file manager type of utility, which helps you manage applications as you would on an OS such as Windows.

In addition to these basic tools, application launchers have their own custom features such as automatic access to frequently accessed or bookmarked applications, shortcuts or buttons that can be configured to run the applications you set it for and so on. SilverScreen, Handscape, GoBar, MegaL and PAL are some popular application launchers available for the Palm.

## Themes from the SilverScreen

Well, it's a bit of a drag to see the same old look everyday, isn't it? So, before familiarity rouses contempt, spice up your relationship with new themes.

Themes provide you with ways to replace the application icons of the Palm with grey-scale graphics of your choice. There are several themes available from the Pocketsensei site (**www.pocketsensei.com**) for free.

Setting up your own theme is pretty simple. First of all, download the theme you want into your PC. The file will be compressed—usually a .zip file for the PC and a .sit file for the Mac. Unzip the file and extract it into a folder in your PC. Get hold of the .pdb file and simply install it in your Palm using Palm Desktop. SilverScreen will automatically recognise all the installed themes.

Go to Options and select Theme. Now the Theme box comes up as shown in the picture. Select from the list the theme you want displayed, tap on OK and there you go. Your Palm has a new look altogether.

If you belong to the elite clan of those who own a colour Palm, you are going to enjoy themes the most. Remember that colour themes for colour PDAs require that you install Chromacast from the Pocketsensei site. Of course, we don't mean to say that people without colour Palms won't enjoy it. The limitation here is that you will have lesser options when it comes to extracting the full potential of the themes. Not all the themes that you can get hold of may run on a monochrome Palm.




Select the theme from the theme box




Your new look Palm

icon at the top-right shows recently accessed applications.

The most attractive features are the pair of buttons on the tool bar called Hot Spots, which can be configured to perform the job you want it to do through the shortest route possible. Configuring Hot Spots is easy. You can either tap on it when configuring for the first time or use Silver Prefs in the Options menu.

Select the options you want to give the Hot Spots from the drop-down menu. There is a Ticker feature as well, which you can enable using the Ticker choice in the Options drop-down menu. SilverScreen offers a lot of features, but it has some drawbacks when it comes to usability. The learning curve involved in order to master all the applications is quite steep. Besides, the very fact that SilverScreen has so many features makes it a little difficult to manage, especially if you need only the basic features of an application launcher. But if you would like to try it out anyway, you can obtain a trial version at www.pocketsensei.com.




Configuring SilverScreen preferences

### A HandScape for your Palm

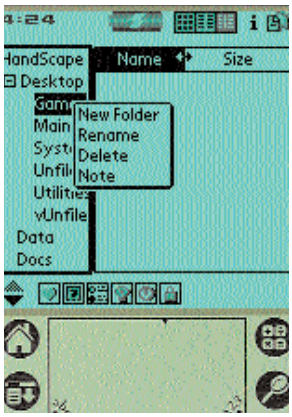
HandScape is an application launcher which consists of a Live Desktop and a file manager. Install it and make it the default launcher during the easy installation process. The HandScape interface looks similar to SilverScreen with its tabs and the Toolbox for dragging and dropping applications. But if you are looking forward to making some cosmetic changes to your PDA, forget it. Unlike SilverScreen, HandScape does not have themes or replaceable icons.

Clicking on the icon at the top-right corner lets you switch between the ordinary icon kind of interface and a 'Windows Explorer' kind of file manager. A neat feature here is the context menu, which allows you to create new folders and attach notes to specific folders. You can rename and delete folders just as you are used to doing while using a PC. Using the context menu is pretty simple too. Just hold down the stylus on

the folder for which you need the context menu. This will display the context menu.

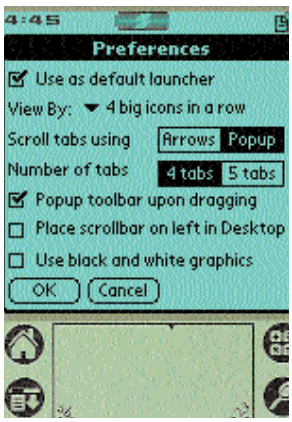
Besides the toolbar, HandScape's file manager offers you three different kinds of views—icons, list and detail views.

Configuring HandScape is child's play. Go to Options > Preferences in the drop-down menu and configure it. You can customise the view and layout from this option.



Using context menus

HandScape is a good application launcher if you are seeking better application management from your Palm. The launcher is very easy to use, even for novices. But if you want more goodies, you had better select an application launcher like SilverScreen.



Configuring HandScape

**GoBar, go!**

Missing the look and feel of your PC? Try out GoBar. This is an application launcher that gives you the feel of OSs we are used to, such as Windows, for Palm. GoBar too allows you to drag-and-drop applications into folders, beam data, delete, and so on.

Installing GoBar is simple. Download the .zip file, unzip it and install the GoBar251.prc file into your Palm. Now tap on the GoBar icon, which comes up on the main menu to start GoBar. You will see a message asking you if you want to make GoBar the default launcher. Tap on Yes and there you are—the GoBar interface is ready to be used. If you want to move away from GoBar as your default launcher later, it can be done via Start > Settings > GoBar Preferences.



GoBar preference settings

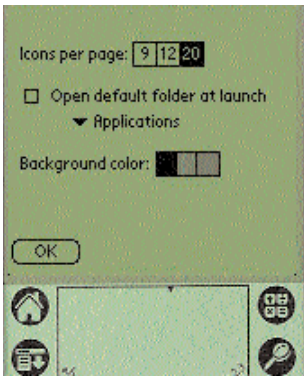
To configure GoBar settings, go to Start > Settings > GoBar Preferences. Select all the features you want to be displayed as well as GoBar settings. Tap on OK and you are done.

You can set up the background colour to your liking from Start > Settings > Setup Desktop. Here you can set various desktop options such as icons per page, the folder to be opened at launch and the background colour.

Click on the background colour tabs to give you the palette from which you can select the shade you want. Tap on the shade you want as the background. Tap on OK, again an OK at the Setup desktop box and the whole new look is before you.

Apart from the familiar 'Windows type' interface that GoBar has, there is not much you can do on it. But if you need something that is user-friendly without many frills, then GoBar is just the application launcher for you.

So what are you waiting for? Check out all the application launchers available. There are a whole lot of application launchers out there, which can do whatever you want them to—well, almost! Go ahead and enliven your relationship with your PDA.



Setting up your GoBar Desktop

**http://www.**

***www.pocketsensei.com***
Pick up SilverScreen, Chromacast, themes and icons

***www.palmgear.com***
The site for all application launchers you'll ever need

***www.handango.com***
Make your Palm do a fandango here




# Troubleshooting

Find it on digit interactive
**Troubleshooting**
Linux HOW-TOs, check out
**Mindware**

Problems with print sharing over a P2P network, cannot play back DVD having trouble loading accessories in Linux? We have solutions to thes and other problems

*Hardware*

## Printing blues

I have an HP DeskJet 670c printer at home. It has been working fine all these days. One day there was low voltage and when I switched it on, it didn't work. So I switched it off immediately. Ever since then,whenever I try to print, I get an error saying 'Incorrect Installation' and 'Your colour cartridge is not properly installed'. However, the colour cartridge is installed properly.

Also, when I open the top lid the cradle comes to rest at the centre. But now after closing the lid it does not go back to its rest position at the right, instead the cradle stays in the centre and the resume/error light continues to flash.

I have tried re-installing the cartridges, reconnecting the printer cables, etc but nothing works.

**Fahd**
Via e-mail

Rx You most probably have a problem with the installation of the printer cartridges. That's the main reason why the ink cartridge cradle doesn't move back to its normal position. But first, try a printer self-test without using the software driver. For this, switch on the printer power supply and hold down the Resume button for a few seconds. The self-test page should now print.

If this doesn't work then try re-installing the cartridges. Specifically check for whether you have removed the tape over the ink nozzles on the colour cartridge, and that the colour cartridge is firmly locked in position. Make sure you push down and align the arrow on the cartridge top with the three colour dots on top of the cradle, and then push the arrow towards the coloured dots till the cartridge locks into position.

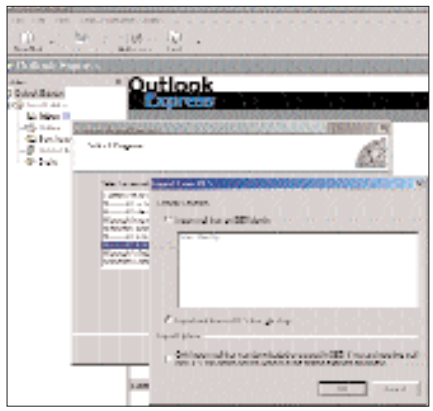
If the problem persists, the most likely cause is a mechanical fault due to erratic power voltage or low fluctuation and you might have to get your printer serviced.

*Internet & Communication*

## Missing e-mails

While upgrading my computer I replaced my Pentium processor with a Pentium III chip, and also changed my hard disk to a 40 GB model. While I have been able to back up most of my data to the new drive, I cannot locate my e-mail stored in Outlook Express. How can I retrieve the e-mails from my old hard disk?

**Vikash**
Via e-mail




You can import your old mails using the Import tool

Rx If you haven't deleted the program files folder from your old hard drive and have it attached to the system, then follow this procedure:

Locate where the e-mails have been stored on your old hard disk. By default these should be in the Windows\Application Data\Identities*** directory. If you can run Outlook Express off your old hard disk, go to Tools > Options and click on the Maintenance folder. Select Store folder and check out where the e-mails are stored.

Start the newly installed Outlook Express on your new hard drive. From the Files menu select Import > Messages.

Now browse to the directory in your old hard disk where the e-mail folders are located and press OK. This will start to import all your older mail messages and folders to your new Outlook Express installation.

Repeat the same steps with Import > Address Book for the folder X:\Windows\Application data\Microsoft\ Address book\XXXX.WAB.

In case you do not have any new messages in your new Outlook Express, you can also simply copy the files from your old mail store to the new store location and Outlook Express will automatically read the messages.

*Applications*

## Unauthorised access

I have a Celeron-400 machine with 192 MB RAM, VIA chipset and Windows 98SE installed. I have Office 2000 Premium. Recently I downloaded the SR-1 pack from Microsoft.com. After this, whenever I launch any Office application, the application stays open for a while and then closes automatically. I have tried re-loading Office Premium, removed and freshly loaded only Office 2000 Premium, but in vain. I am helpless. Please tell me how can I revive my Package.

**S.K. Bhaumik**
Via e-mail

Rx You have most probably installed a pirated copy of Microsoft Office that has the CD product key of GC6J3. This CD key is not valid with the releases of SR-1/SR-1A and therefore halts your installation. The solution would be to remove all traces of Office 2000 from your registry by uninstalling the package or using a third-party registry cleaner. Then reinstall Office 2000, but don't apply SR-1.

Another reason that this problem may occur is if the ProductID string value in the HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Uninstall\{GUID} registry key, is present but the value data is empty (i.e. it appears as " " in the Data column).

Here, instead of {GUID} as shown in the registry key, there should be a 32-bit character string that changes according to

the version of Office 2000 that you have installed. So, for your installation of Office 2000 premium, the {GUID} would be {00000409-78E1-11D2-B60F-006097C998E7}. Using regedit, navigate to the registry key mentioned and check the data value. If empty, add the value mentioned above.

*Applications*

## No music

I am using the Windows Me operating system. Whenever I try to run Winamp, an error which says 'Winamp has caused an error in kernel32.dll. Winamp will close now' appears and I am unable to run the player. I uninstalled Winamp and reinstalled it but the error persists. Also, the MULTIIMEDIA AND MMSYS.CPL file in the Control Panel is missing. Please suggest remedial measure.

**Sukumar**

Via e-mail

Rx There are two possibilities here: It could be because your sound card isn't properly installed, or that some of your system files are corrupt. To check whether your sound card is installed properly, check whether the device manager displays its name without any exclamation marks against it. To check for the second possibility, go to Control panel > Add/ Remove programs > Windows Setup and from the Accessories selection box, deselect the entire multimedia category and click on Apply. Restart the machine and go to the same menu and reselect the multimedia category. This will remove and reinstall the multimedia components, thereby repairing any corrupt or missing files.

*Applications*

## No play, no fun

I have a 12x DVD drive on my machine (P-III 866 MHz processor, 20 GB HDD, 128 MB RAM). I have Windows Me installed. I have one movie DVD and four DVD software, all trial versions. When I run the DVD it plays back only for 5 minutes. If I delete this software I get the following message, 'You need DVD Decoder Software or DVD Decoder hardware'. So how do I run the DVD movie on my PC?

**Nirav**

Via e-mail

Rx Are you looking for a 'free' and 'good' DVD player? None exists! If you want a good DVD player, you'll have to pay for it, since the licensing fees that software companies have to pay for CSS/Dolby/DTS will mean that there is no way they can offer it for free. There is one DVD player that offers no play-time restrictions, namely, VideoLAN (www.videolan.org).



VideoLAN: a free software DVD player

*Windows and Applications*

## Of improper shut downs and space savers

I have a Pentium-III (550 MHz) with 64 MB RAM on an 810 chipset-based motherboard. While booting, I get an option to select Windows Me or Windows 2000 (Professional). I am facing two problems for over six months. I have tried all the menu options available along with registry editing in both OSes to an extent, but I have failed to resolve them.

Problem 1: In both OS (Win Me and 2000P), when I use the Shut Down option from the Start menu, both the OS perform an otherwise normal shutdown by saving settings but do not display the end message 'It is now safe to shutdown the computer'. In Me, the message gets displayed as a flicker for less than a second before the screen goes blank and I am able to power off. In 2000P, after saving the user settings, the blue screen is displayed after which the system restarts (instead of shutting down). At this point I normally power off. I have checked the msconfig.exe to check if the Fast Shutdown option was selected but this option wasn't there.

Problem 2: I have installed Pixelview TV Tuner card along with its running and capture software on Windows Me. I have recorded some TV clips using the software but the only format created by it is .avi. The AVI files take up a lot of disk space because of which I am not in a position to transfer them to a CD. For example, there is a three-and-a-half minute song that is taking up almost 700 MB of space out of the total of 2 GB taken by these AVI files. Please suggest some software/utilities using which I can convert these files to MPEG or any other format and free up some space also.

**Sarang Shahane**

Via e-mail

Rx As regards your first problem, you don't have power management explicitly enabled in your BIOS or you disabled ATX soft power off because of which your OS is not able to soft power off. Windows Me issues a call but doesn't have a failure switch over to reboot if the call does not work. Window 2000 does issue an alternate reboot call if the shutdown call fails.

To test whether Power Management is correctly installed, go to the control panel and double-click on Power options. Then on the APM tab, click Enable Advanced Power management support.

Regarding your second problem, install Virtual Dub (www.virtualdub.org) and Divx 4.0 from Divx.com and use the combination to compress your AVI files to a compression far greater than MPEG.

1/4 page AD

*Linux*

## Loading accessories in Linux

I have a P-III 866 MHz machine containing 128 MB RAM and a 40 GB hard disk. I have recently installed Linux 7.1 on my hard disk. It works well in the Xwindows mode, but I am unable to load my sound card, modem as well as other accessories such as printer and scanner in it. Can you help me load them? Also, please tell me how I can view movies in Linux 7.1 Xwindows version.

**S.L. Chamaria**
Via e-mail

Rx To configure your sound card, start Setup and choose the sound card configuration dialogue. Follow the onscreen help and instructions to configure your sound card. For the modem you need to use one of the diallers such as KPPP to configure the serial port your modem is attached to and dial out to your ISP. To access the scanner you would need to install a package called SANE (Scanner Access Now Easy) for Linux that allows you to acquire images from most popular scanners. To configure your printer, run Setup in X mode and click on the printer configuration button, choose to install a local printer, choose your printer and define the port it is connected to. The installation is then complete.

For watching DivX movies there is a 'DivX Playa' available for Linux that runs in Xwindows mode. For MPEG, AVI and other popular formats you can use 'Aktion'.

*Windows*

## Misbehaving Accessories

I have a P-II, 300 MHz machine with 128 MB SDRAM, 4.2 GB HDD with no partition and Win 98 (4.10.1998) OS. Whenever I start MSPaint from Accessories it gives an error 'mspaint.exe is linked to the missing export mfc42.dll:6452 and a device attached to the system is not functioning'. The same happens with the clipart in any Office 2000 application; the error shown is 'the artgalry.exe file is linked to the missing export mfc42.dll:6883'. Previously all the applications were working properly. Please guide me.

**Manan Bajoria**
Via e-mail

Rx This type of error occurs if the Mfc42.dll file is damaged or is the incorrect version. This particular Win 98 file is 954,128 bytes in size, version 4.21.7325. You can resolve this error by making a new copy of the Mfc42.dll file from your Win 98 CD into the Windows\System folder using the System File Checker tool. Go to Start > Run, type sfc.exe in the Open box and then click OK.

*Applications*

## Unpartitioning hassles

I have Windows 98SE on my PC. I tried to install Linux Red Hat 7.0 for dual booting. I used Partition Magic 5.0 to create a separate partition for Linux. I allotted about 1 GB space from the D drive (I have five partitions on my hard disk). The software created the partition. After a few days, I formatted the C drive and reinstalled Windows. Now I want to regain the space allocated for Linux. But to my surprise, when I installed Partition Magic again, it could not run and an error message popped up saying it could not recognise the drive letters. Please help me regain my drive space back.

**Bikash**
Via e-mail

Rx What you need to do here is to start FDISK in command prompt mode and delete any non-DOS partitions that are being used by Linux and then try re-running Partition Magic. Once Partition Magic starts up you can merge the empty space into one of your FAT32 partitions.

*Windows*

## Installing new fonts

I own a P-III, 850 MHz, 128 MB RAM operating on Win 98 SE. My problem is that the 'Install new font' option in the file menu of the Fonts folder is missing.Could you help me out?Amos

**Lalrema**
Via e-mail

Rx The Fonts folder in your Windows machine seems to be corrupted. You will have to use a third-party software to rectify this error. You can simply use a free utility, TweakUI, that will check the folder and repair it for you.

*Internet & Communications*

## Web mail in Outlook Express

I am using Outlook Express, which usually

*Hardware*

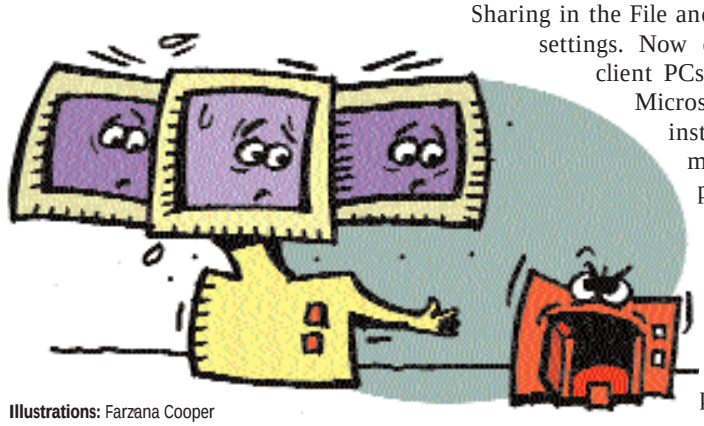
## Print sharing over P2P network

I am facing a problem on a peer to peer network connection at my customer's site. We have been trying to solve this problem for the past one week with no success.

We are able to connect with all the systems but are unable to share the printer with all the systems. We are able to connect the printer with the first, fifth and sixth system but the second, third, fourth, seventh and eighth systems are not shared with the network. Kindly give us the solution for this peculiar problem.

The machine configuration is as follows: Intel P4 1.4 GHz processor, 256 MB RDRAM, Mercury i850 chipset motherboard, 40 GB Seagate HDD, 32 MB AGP graphics card, 10/100 Dax NIC. There are eight systems with the same configurations connected with an 8 port D-Link 10/100 switch. The OS is Windows 98 SE and the application software are Pagemaker, CorelDraw.

**M. Srinivasa Raghavan**
Via e-mail



**Illustrations:** Farzana Cooper

Rx Right-click your Network Neighbourhood icon, select Properties and make sure you have File and Print Sharing for Microsoft networks installed on the machine to which your printer is connected. Also make sure you enable Print Sharing in the File and Printer sharing settings. Now check that your client PCs have clients for Microsoft networks installed and are mapping their printer driver to the network port instead of a local port.Also, ensure that you set up the protocols for all the machines properly.

*Windows*

## Cranky mouse

I have a problem with my computer display. On the desktop, when I try to click on an icon with the mouse, it moves away from the mouse pointer and I can't select an icon easily. Is this because of a virus? How can I solve this problem? I use Windows 95.

**H.J. Patel**

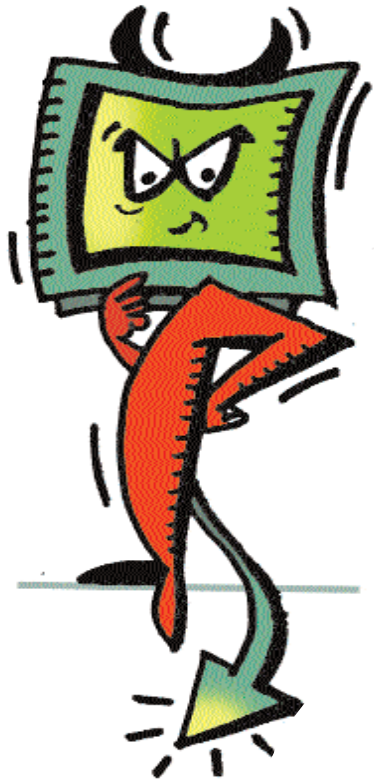
Via e-mail

Your computer is affected by the W32.Magistr.24876@mm virus. This virus acts as an e-mail worm and is also network aware. It infects Windows Portable Executable (PE) files, with the exception of .dll system files. The worm mails itself to addresses taken from the Outlook/Outlook Express mail folders (.dbx, .mbx), the sent items file from Netscape and Windows address books (.wab) that are used by mail clients such as Microsoft Outlook and Microsoft Outlook Express. The e-mail message may have up to two attachments, with a randomly generated subject line and message body. On computers that have been infected for two months, on odd days the desktop icons are repositioned such that whenever you bring the mouse pointer close to an icon, the icon appears to 'run away' from the mouse.

The solution to this problem is to install the latest updates to your anti-virus software and clean it out. It is a fairly common virus and all major anti-virus programs will be able to detect and clean it.

You can also manually clean it. Go to Start and click Run. Type regedit and navigate to the key: HKEY_LOCAL_MACHINE\ Software\ Microsoft\Windows\CurrentVersion\Run. In the right pane, delete the value which references a file infected by W32.Magistr.23876@mm.

Note: This virus contains bugs which will corrupt some files while attempting to infect them as well as when the first payload activates. These files cannot be repaired; they must be restored from backup. (These files may be detected as W32.Magistr.corrupt.)



supports working offline to check or send mails. We have a LAN, the server model is Windows NT 4.0. Basically, I use Rediffmail, Yahoomail and Hotmail.com. I am unable to get these mail sites. What is the problem and how do SMTP and POP3 mail servers work? How do I configure these servers?

**Prem**

Via e-mail

Rx You can configure to check your Hotmail account through Outlook Express using http mail. For this, go to Tools > Accounts and click on the Mail tab. Add a new mail account and in the choice of type of account, select 'http'. This will configure your Hotmail account. For your Yahoo account, similarly, you have to select POP3 and give the POP3 server and SMTP server for Yahoo (find out what it is and key it in here). However, Rediffmail doesn't support POP3 or SMTP and therefore you cannot check them offline.

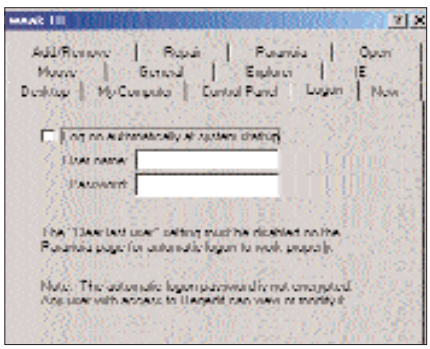
*Windows*

## Ghost user

I have a P-III system with 128 MB RAM and Windows Me. Every time I start my computer I get the User Login screen though there are no users. I have to press Cancel every time and it is very annoying. Please tell me what to do to avoid this.

**Kaushik**

Via e-mail



Insert your user name and password here to log on automatically

Rx Just add another user by entering a user name but no password at the login screen. The next time you load Windows you can just press [Enter].

Now load TweakUI and enable the Autologon feature with the new user name you have created and no password. Alternatively, you can disable the user logon in the Users and Passwords settings in the control panel, although this is not recommended in a networked environment.

*Applications*

## Copy right!

I have a P-III, 700 MHz system with Windows Me. I have a CD-ROM drive and a CD writer. The problem occurs when I try to copy data onto a CD. After 3 to 70 per cent of the data has been written to the CD, the CD comes out and I get a writing error about speed. I write at 4x speed. If I write at 6x or 8x speed, the blank CD may get wasted. Please advice me on how to solve this problem.

**Sandip Mitra**

Via e-mail

Rx Do not perform an 'on-the-fly' copy while replicating CDs. Make sure that you use 'Create an image' first on the hard drive and then copy it onto a CD. Also ensure that you have the right ASPI drivers installed for your CD writer.

DO YOU NEED HELP?

Send an SOS to sos@jasubhai.com

Or write in to DIGIT, D-222/2, Om Sagar Bldg, MIDC, Nerul-400 706

tips & tricks

# Expert with Office XP

Office XP offers you several additional functionalities over the previous versions of Office. Here's how you can work smart with Office XP




Illustration: Mahesh Benkar

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Find it on digit interactive

**Tips & Tricks**
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# WORD XP

The first thing you have is more options for correcting and formatting text. So let the words flow as your fingers fly over the keyboard in tandem with thoughts and ideas

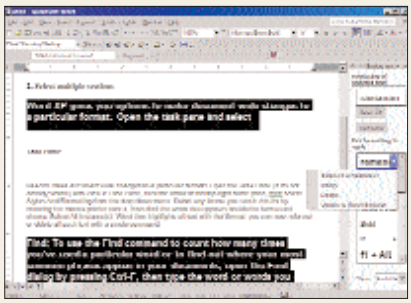
## Formatting with style

While typing long documents it is generally a good idea to stick to a certain type of format for sections within the document. Word XP has a feature for styles and formatting on the task pane. You could use the existing style or add a new style to the task pane formatting list.

If the task pane is not visible, enable it from the View menu. Choose Styles and Formatting from the task pane. This provides you with a rich list of formatting styles. Select the text you want to apply the formatting to and click on the required format. You can add new, customised formatting by clicking the New button. This is a good way to reduce mouse clicks for reformatting text every now and then.

## Document-wide format changes

Word XP has options to make document-wide changes to a particular format. Open the task pane and select Styles and Formatting. Select any of the formats you want to change, click on the

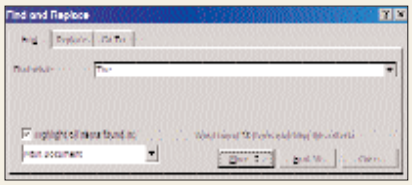


Select text with similar formatting

arrow that appears near that format and choose 'Select all _ instance(s)'. This highlights all the text with that format, allows you to make modifications, and gives you the option to choose another format. This makes it easier, especially when you want to make document-wide changes for a particular style, which you have used in specific sections throughout the document.

## Count repetitive words

At times you might want to count the occurrence of a particular word in the document. Word XP allows you to count the occurrences easily. Press [Ctrl] + [F]



Check on words repeated often

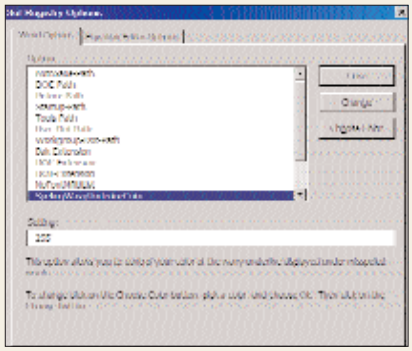
to open the Find dialog box and type the word for which the count is required. Enable the 'Highlight all items' check box. Now click 'Find all'. Word XP shows the count for the word you have typed in the Find box and also highlights all the occurrences of that word, so that changes, if any, can be made easily. This is a simple way to find repeated words instantly.

## Back up Autocorrect entries

Suffering from OS-related problems? In the worst-case scenario, you might want to reinstall the OS or the application. In such cases, all the entries you have made to your Autocorrect dictionary might be lost. Word XP allows you to back up your Autocorrect entries. Open the file Support.dot from C:\Program Files\Microsoft Office\Office10\Macros. The file displays three buttons. Click the AutoCorrect Backup button. This gives you an option to Backup, Restore or Cancel. Choose the appropriate action to either back up or restore Autocorrect entries.

## Change colour code

Tired of those old red underlines pointing out your spelling mistakes again and



Change colour of the error-signifying line

again? Then change the colour! Word XP has an easy registry tweak that can change the colour of the error underlining, besides the grammatical errors signifier. Open the Support.dot file from C:\Program Files\Microsoft Office\Office10\Macros. Click the Registry Options button from the table. From the window that pops open, choose SpellingWavyUnderlineColour and click on Choose Colour. A window pops up from which you can select the colour you want the misspelled words to be underlined with. Click the Change button. The next time you start Word, all words wrongly spelt would be underlined with the colour you have chosen. To change the underlining colour for possible grammatical errors, click GrammarWavyUnderlineColour. To change the underlining colour for possible formatting errors, click FormatConsistencyWavyUnderlineColour.

## Working your own way

Word has a default setting of Autocorrect set to correct and capitalise words as and when you type. Word XP allows you to control the way Word changes the words you type. When you place the cursor on the word that has been automatically changed, Word displays a small blue box. (This option is one of

Ad will come

the features of smart tags in Word XP.) When you point the mouse a thunder-like symbol is shown, which when pointed to gives you the options of undoing the changes made, stop making similar changes, or launch the Autocorrection settings. This way you can control the way your software changes the words you type. When the blue box appears you could also press [Alt] + [Shift] + [F10] to launch the smart tag menu.

### Random selection

With the earlier versions of Word you were not allowed to select words that were non-contiguous. With the latest version you can select words and text randomly in a document.

While selecting text which is spread all over the document, press the [Ctrl] key. This will allow you to select all the text of your choice at one go, even when it is non-contiguous.

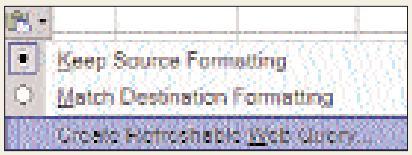
Click the first word to be selected as you would do it normally. The next selection could be made by pressing the [Ctrl] key to make random selections. This is highly useful when you want to reformat words.

## EXCEL XP

**Master Excel XP with its new features for refreshable queries, organising and repairing files. Make Excel your personal assistant with the new conversion and speech processing features**

### Online updates

You have copied some values from the Web onto your Excel sheet for some analysis. Your analysis has to stay current with the data on the Web site. Wouldn't




Create refreshable queries for updates

it be easier to have the software do the updates for you time and again in the background? Excel XP has the facility to do so. Copy the table from the Web onto an Excel sheet. For example, choose some data from Reuters or any other financial portal. Paste it onto the Excel sheet. A smart tag appears next to the



Select the tabel for updation

pasted table. Click the smart tag and choose Create Refreshable Web Query. It opens a pop-up window where you can select tables from the Web page, which would also update the data on the Excel sheet. Click the Import button to import all data immediately. You have a choice to automatically refresh the data or do it manually from the View > Tools bar > External data option.

### Cross checking

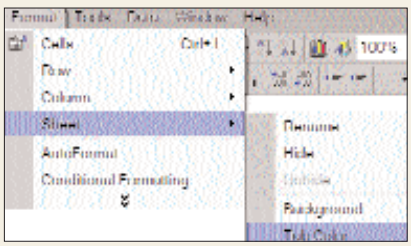
After you have entered a whole lot of data all by yourself, you might need to recheck it. And rechecking the data with the onscreen version can be a pain. Don't panic. Excel XP has the facility to read out data. Choose Speech from the tools menu and click on the Show Text to Speech Toolbar option. On the Speech toolbar, click the Play button and the reader starts reading the data row-wise, starting from row one. You can change the settings to read column-wise also by clicking the appropriate button on the Speech toolbar.

### Easy access to new AutoSum functions

The earlier version of Excel had all the Autosum features handy, but they were limited. Excel XP has the Autosum button linked to a lengthier list of functions, which can be added to your worksheet in a jiffy. You can quickly calculate the average of selected cells, maximum or minimum value, and much more with these new and powerful functions. Just click on the arrow next to the Autosum symbol for access to all the functions.

### Stay organised

We would generally like to organise data in a way that's easily accessible. This is



Choose tab colours for sheets

why we use tools such as Excel and other spreadsheets. Excel XP has a new, helpful feature by which you can colour code sheets with related data in one colour. Right-click the sheet and select Tab colour. When the colour window pops up, choose the required colour and click OK. You could press [Ctrl], select all the



Changing tab colour by right-clicking tabs

Ad will come

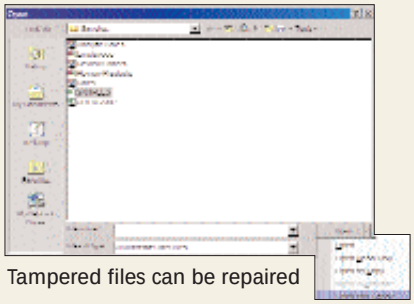
related sheets and colour them together. Alternately, you could choose the Tab colour by selecting Sheets from the Format menu.

### Watch your values

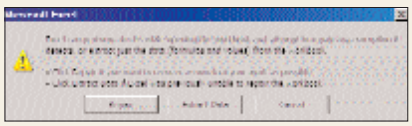
Excel XP has an option that allows you to add watches to cells. When you need values across the sheets within a workbook, you might be required to shuttle to and fro between the sheets. Watches come to the rescue at such moments. Right-click a cell and click on Add watch. A watch window pops up in which all the cells that have a watch are displayed with their corresponding values. This window stays even when you shuttle between sheets. This way it reduces your shuttling between sheets to look for cell values that are required across the workbook.

### Repair them

Excel XP does an automatic repair to corrupt files. It tries to open and repair the file simultaneously. On the other hand, Excel XP also has options for manual repair. Choose Open from the File menu. Select the file to open from the appropriate path and when clicking the Open button, click the arrow next to it and choose Open and Repair from the



Tampered files can be repaired



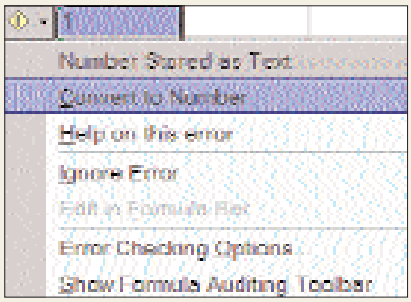
Excel's repair or extract option

drop-down list. This allows you to repair the file. Upon choosing the Open and Repair option, it gives you options to Repair, Extract data or Cancel. Based on your requirement and condition, choose the appropriate action to be performed.

Note that Excel XP provides other options to repair files at different situations.

### Convert text to numerals

You might want to format certain areas of the Excel sheet with text formatting. You might also accidentally have numbers in those areas, which might be needed in some critical calculations. Excel XP has the option of converting text-formatted numbers into true numbers. Use Excel's error checking options button. You might notice that any cell which has a number formatted as text will have a small green triangle on the left top corner of the cell. Select the range of cells that have numbers formatted as text. Click the error checking options




Option to change text to numbers

button (a smart tag), which appears next to the selected range of cells. Choose the Convert to Number option from the menu that pops up to convert the numbers to true numbers. Now you can use them for calculations across the workbook.

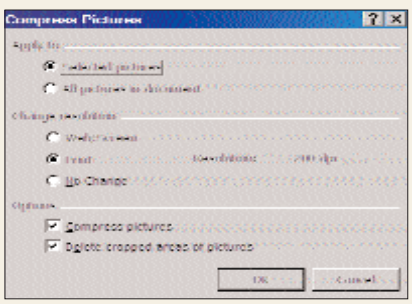


## POWERPOINT XP

PowerPoint has more power now. Here's how you can add pizzazz to your presentations

### Compress pictures

Presentation blues? You must have had those when your presentation became too heavy with images. Now there's a way to make your presentations light while retaining all the images. Save the pictures that you have to insert as JPGs, GIFs, or in any other format which is lighter. PowerPoint XP provides an option by which you can compress the embedded images. Click on the images you want compressed by holding down the [Ctrl] key or by selecting them all. Choose the Picture toolbar from View > Toolbars > Picture. Click on the Compress Pictures button, and choose 'Delete the cropped



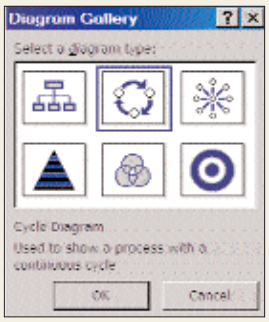

Crunch your presentations

areas' of the picture to make the presentation lighter. Just remember that if you compress pictures by selecting Web/Screen, Print, or 'Delete cropped areas of pictures' from the Compress Pictures dialog box, you won't be able to restore images to their original resolution or size.

### Add diagrams

PowerPoint XP offers a new Diagram functionality, which makes it easier to add organisational charts. Select Diagram from the Insert menu from the

Ad will come

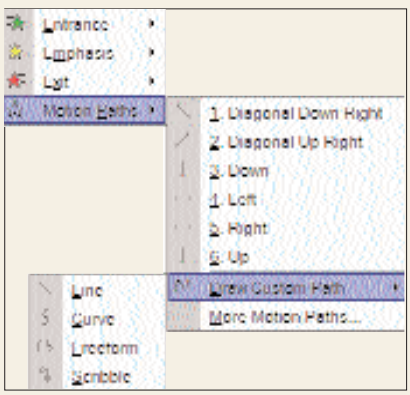



PowerPoint introduces a new menu option to insert diagrams easily into your presentation

dialog box and choose the left-top corner chart. You could right-click any of those boxes to add Subordinates, Co-workers or Assistants to the existing charts. This reduces work when you have to build organisational charts with PowerPoint XP. You can also select Venn diagrams, Cycles, Radials, Pyramids, etc from the Diagram listings.

## Customise animations

You can now customise animations in PowerPoint XP. Start off by selecting your own tract for the object to move on. This could either be a straight line, a curve, or a scribble. Right-click the text or the image for which the animation is to be set. The task pane opens and gives




Draw your own animation schemes

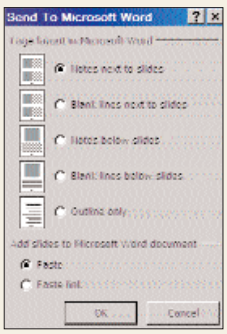
you a list of animations that can be assigned to an object on the presentation. To choose your own animation style, click on Add Effect and choose Motion paths. From this, choose the Draw Custom path submenu. This provides you with options to draw Straight lines, Curves or Scribble paths. You can choose any of these options and draw the path on the slide. The starting position would be denoted by a green triangle and the trailing edge by a red triangle. You can also resize and move the path. In this manner, you can even create small cartoon movies using PowerPoint XP.

## The print preview option

PowerPoint XP has finally added the print preview facility. You can use this to preview slides before printing. This option was not present in the earlier version.

## Creating alternative layouts in Word

You now have the power to create alternative layouts (for making handouts) in Word, which are not available in PowerPoint XP. You can do this by exporting the slide to Word through the Send To option. From the File menu choose the




PowerPoint allows you to export your presentations to Word to make Word style layouts

Send To option, click Microsoft Word and then select a layout option. For example, if you want to print three slides per page but do not want lines for audience notes, send the handout to Word, choose the Blank lines next to the slides option, and delete the lines in Word. Choose any layout that suits your requirement and export the slides to Word. You can also make the necessary additions and deletions to the handouts in Word.

## Add a button to the macro

You might be required to use a particular macro many times in a presentation or across presentations. It will be easier for you to create the macro and place it on the standard toolbar for instant access. To do this, choose Customize from the Tools menu. In the window that pops up, choose the Commands tab and click on Macros from the Categories option. The right side of the window will display all the macros available. Click and drag the one you want to access and drop it on the toolbar when you see a plus sign.

Note that the plus sign should appear while you move the macro to the tool bar. If you see a cross sign instead, it implies that the macro cannot be placed in the area you want it to be.

## Protecting presentations

Earlier versions of PowerPoint had one major drawback: you could not protect the slides. And the only way you could make them was through PowerPoint show files. Now PowerPoint XP gives you the additional option of protecting your slides by a password. Choose the Options submenu from Tools and click on the Security Tab in the window that pops up. You can select either the Password to Open or the Password to Modify option, or both. Clicking on the Advanced button lets you choose the encryption type, length, and so on. This way you can secure your presentations from others.



Protect your presentations with the new password protection option in Powerpoint XP

Ad will come

### Disabling features

The term 'disable features' sounds strange, doesn't it? Why would anyone want to disable features? But there are times when it is imperative to disable certain new features in PowerPoint XP. To do this, choose Options from the Tools menu. Select the Edit tab if it's not highlighted and click the section called 'Disable new features'. From here you have a choice of disabling new animation effects, multiple masters, and even the password protection option. The idea is to reduce problems when you share presentations with users who use earlier versions of PowerPoint.

### Keep personal info under wraps

Your presentation may have some personal information, which you might not want to divulge. PowerPoint XP allows you to restrict this information from being propagated to other users.

Choose the Security tab from the Options submenu in the Tools menu. Check the 'Remove personal information from this file on save' check box. This does not save personal information such as author, the company, or names associated with tracked changes or comments, thus saving you from unwanted exposure.

## OUTLOOK XP

**With facilities to import data from Schedule+ and mail maintenance utilities, Outlook XP makes life easier. Manage mails better with these new tips and tricks**

### Be different, sign different

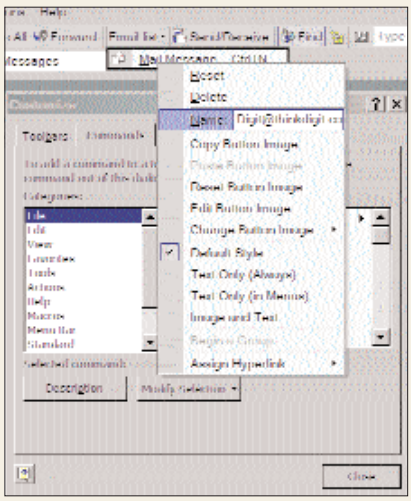
The new Outlook XP provides for more individuality in e-mail. You can add different signatures for Reply, Forwards and regular mails. The previous version of Outlook did not have this feature.

To change your signature, go to the Tools menu, select Options and click on the Mail Format tab. Under signature, click the 'Signature for new messages' drop-down menu and click on the signature required. Repeat this for the drop-down menu for replies and forwards and click on the signature you want to use. Confirm by clicking OK and you are done.

### Custom mailer

If you are sending e-mail frequently, you could automate the process of creating and addressing the message. Outlook XP allows you to add a custom toolbar button that lists the people to whom you send mails more often. All it needs is a single click on the Custom toolbar button to send an immediate mail message.

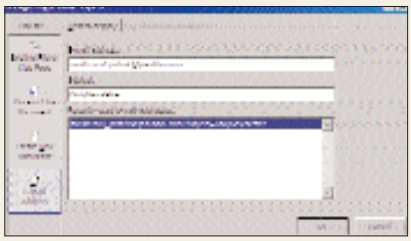
If you send out daily mailers with the same subject line, you can add that to the mail on the auto mailer list. Choose Customize from the Tools menu. Click on the Commands tab in the categories



Renaming the new toolbar buttons

list, click on New Menu and drag it on to the toolbar. On the toolbar, right-click the New Menu button and in the Name box on the shortcut menu, type a name for the new toolbar button. (Do this when the Customize window is open, otherwise you won't be able to right-click and change the name of the button added). Now choose File from the Categories tab and click on Mail Message on the right and drag it onto the newly created button.

When you move the mouse over the



Choose the e-mail ID for the custom mail

button, a grey box appears. Drop the mail message into that grey box. Now right-click the mail message added to the button on the toolbar, type a name for the mail (if required) and move to Assign Hyperlink in the menu and click Open. In the window that pops up, choose E-mail Addresses from the Link-to category. Fill in the appropriate e-mail address and the subject line of the frequent mailer and you're ready to send mail.

### Open, dismiss or snooze with one click

Reminders are helpful when you have one too many things to occupy your time with. You could act on more than one reminder at a time in Outlook XP. These reminders are listed in the Reminders window, which is accessible from the View menu. You can Open, Dismiss, or Snooze multiple reminders with a single click.

Ad will come

Select the first reminder and select any further reminders holding the [Ctrl] key.

## A different way of loading Outlook

You have the option of changing the way Outlook XP loads while opening—you can make a program run or open a specific folder when it loads instead. This can be done with command line options issued with the shortcuts used to launch Outlook. To create a new shortcut for Outlook on desktop (for testing the various options), right-click and open the shortcut and type a space after the path in the Target text area.

These are the command line options you can use with Outlook shortcuts:

To open the My Documents folder when you start Outlook, the complete entry would be C:\Program Files\Microsoft Office\Office10\Outlook.exe/select C:\My Documents.

To hide the Outlook bar you could issue a command similar to C:\Program Files\Microsoft Office\Office\Outlook.exe/select outlook:/folder.

To create an item with the specified file as an attachment you could issue a command such as C:\Program Files\Microsoft Office\Office\Outlook.exe /select outlook:/a path/file name.

There are more command line options which you could refer to in Outlook's Help file.

## Import Schedule+ data

Outlook XP does not allow you to use Schedule+ anymore as your primary calendar. Once Outlook XP is installed on your computer, you can use the Import Export wizard to import Schedule+ data on your Outlook mail client. All items will be imported into the Calendar folder. To import your Schedule+ data, choose Import Export from the File menu. From the window that pops up, choose 'Import from another program or file' and click Next. In the list, click the appropriate version of Schedule+ and click Next again. Follow the instructions on your screen, they are simple and finally all your Schedule+ data would be imported.

## Reclaiming attachments

Outlook XP has a special security feature that prevents you from opening or saving attachments of certain types such as .exe, .bat, and even .hlp files. When you receive a prohibited file type as attachment, Outlook XP tells you that you have received an unsafe attachment and does not allow you to view the attachment. Though not impossible, it is still difficult to reclaim the attachment rights. You could do it by making a minor change to the registry. From the Start menu, select Run, enter regedit, and press [Enter]. In the Registry Editor, navigate to HKEY_CURRENT_USER\software\Microsoft\Office10.0\Outlook\Security.

Click anywhere in the right pane of the Editor and then select Edit/New/String Value. Enter Level1Remove as the name of the string value, and press [Enter]. Right-click the Level1Remove string, and in the Value Data field, enter



Choose file types for download

a list of the file extensions (each separated by a semicolon) for the formats you want to unblock. Click OK. (For example, if you entered exe;hlp, you'd unblock executable and help files.) Exit Registry editor. Now you are done and have reclaimed your attachments rights. It's okay to heave a sigh of relief now!

**Note:** With viruses such as Melissa and I Love You, it is better that you leave the default Outlook XP security level to block unsafe attachments. That way you can have a worry-free e-mail client, which takes care of all unsafe and vulnerable attachments.

## Linking the subject

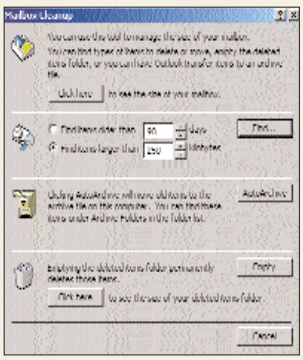
The old Outlook recognises URLs as hyperlinks in the message body. Outlook XP, however, has gone one step further. It also recognises links in the subject line and turns them into hyperlinks. Recipients who also run Outlook XP can click the link in the subject line and their default browser would open the link. This is very handy when you have to send just a link and not the entire e-mail.

## Dual purpose software

Outlook XP can be used as a dual-purpose software when you run out of desktop space. You can use it either as an e-mail client or as a browser. Just type the URL of any site in the Address area, which is just below the menu and below the standard toolbar. You will see the page loaded on the area to the right where mails are displayed. This serves two purposes and saves desktop space too.

## Mail mechanic

Outlook XP gives you a new option to maintain your mails. Go to the Tools menu and choose the Mailbox Cleanup option. It opens a window which gives you various options for mail maintenance. Click on the first button to see your mailbox size. The Find button allows you to find mails based on size. You can also archive messages and purge deleted items can also be done with this option.



Mail maintainance with the Mailbox Cleanup option



Ad will come

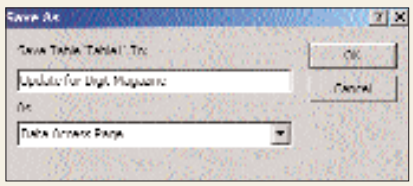
# ACCESS XP

Mount your data onto the Web with Access XP's Web features. Undo or redo actions any number of times and trim your databases with the new features

## Save to Web

With the previous versions of Access, one had to create a new Data Access page to transfer reports and forms to the Web. Access XP has simplified all this. Now all you need to do is highlight an existing form or report in the database window and port it to the Web. To do this, highlight the form or report in the database window and choose Save as from the File menu. Choose Data Access Page in the list at the bottom of the dialog box which pops up. Click OK to complete.

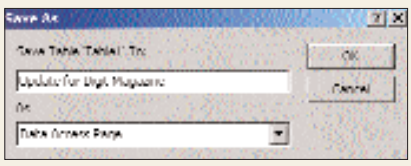
It is also possible to verify the report or form to see if it's suitable to be posted on the Web. Open the file you have just created by double-clicking on it and your browser should open and display the content. This is the simplest and the easiest way to make sure your files are ready for posting on the Web.



Save for the Web directly from Access

## Access sample databases

Access XP has made life simpler for database sampling. Unlike the previous version, one need not open sample databases from their default paths with Access XP. Simply choose Sample Databases from the Help menu and the list shows up all the sample databases. Click the one you wish to open.



Choose sample database from Help

## Undo and do again

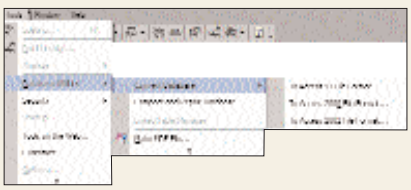
One more problem with the earlier versions of Access was that one did not have the facility to do multiple undoes and redoes in the design view. Access XP allows you to do so. Certain views, however, do not support multiple undoes and redoes.

These are database diagram design, view design, stored function design, function design and trigger design. Database container view allows you to undo only and not redo.

## Database conversion

Access XP gives you the option of converting databases to different version formats. It allows you to convert Access databases either from or to Access 97, 2000 or 2002. To convert one format to any other format, go to Tools > Database Utilities and choose Convert Database. Access XP lists you all the conversion schemes. Choose the one that you want.

If the database is not open, Access will prompt you to choose a database to convert as well as the filename in which you can store. You can go ahead with either upward or downward conversion without worrying about compatibility issues pertaining to versions.



Convert older or newer databases to any required version with the new feature

**Note:** Access 97 does not support ADO. Converting Access 2000 or 2002 Database into Access 97 format would result in loss of information or some critical errors. Watch out for this when you do the conversion.

## Ease of use

Working on forms and reports is a breeze with Access XP. Mentioned below are some shortcut keys that would make work simpler and easier:

[Ctrl] + [Tab] To move to a subsection

[F2] To switch between Edit mode (with insertion point displayed) and Navigation mode

[F4] To switch to the property sheet (Design view in forms and reports in databases and Access projects)

[F5] To switch to Form view from Form Design view

[F6] To switch between the upper and lower portions of a window (Design view of the Advanced Filter/Sort window only)

[F7] To switch to the Code Builder from Form or Report Design view (Design view window or property sheet)

[F8] Invokes the field list in a form, report, or Data Access Page. If the field list is already open, it moves focus to field list. After selection of a field from the list, you could just press [Enter] to insert that field.

[Ctrl] + [Enter] or [Alt] + [D] To open the selected table, query, form, report, Data Access Page, macro, or module in Design view

## Zooming in

Access XP incorporates additional zooming powers of 500 and 1000 per cent in the Zoom option in Print Preview.

This might help you locate subtle errors that might slip your eyes when in lower zooming powers.

Ad will come




Imaging: Ram

# Put your Money on it

Our kind thrives on new stuff. Be it a new cell phone, that radical DVD drive or those cool-looking speakers that you keep reading about on the Internet. There are people who, even though they might never really go out buy them, want to be kept abreast of the best in technology. These buyers often know about the newest out there, but there are so many choices the Indian consumer is faced with right now, that one must make an informed choice. That, coupled with the breakneck pace at which technology is barreling ahead, the product or technology you decide on adopting now may be passé within the next few months. Choices, choices…!

This Smart Buyer's Guide will help you do just that. Buying the right kind of hardware is all about understanding the products in a category and knowing what makes one different from another. Whether it's that new hard disk technology that you're wondering about or the new processor that promises to double the performance of your games, the marketing voice will throw a whole lot of terms and jargon at the consumer. This might result in going in for a technology that might not always be of any practical use to your particular application.

Here, we have put together a set of categories of some of the hottest new products and through this guide aim to demystify the jargon and technology that usually accompanies these products. With an explanation on the technology and the operation of these products, you will learn what makes these products tick and whether they are really all that they say they are.

The decision maker at the end of each category will help you identify what's the newest in the market and eventually help you make a choice for your specific needs, applications and budget. Also, you will know what parameters and specifications are most important to you the next time you are faced with the quandary of what hardware you want to buy.

This guide is meant to be a detailed reference for learning about new technologies and products so that the next time you are heading over to your hardware store to buy a new graphics card or are figuring out what is the best upgrade for your computer, you can be confident that you will know exactly what the sales person is talking about when he throws terms like ATA/100 and Socket 423 at you!

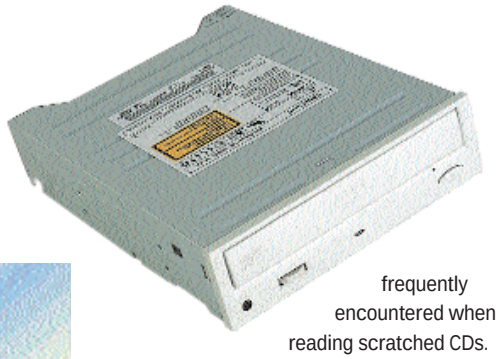
# Spinning the Disc

Till just a few years ago Creative was the only brand in the CD-ROM drive market. The drives then cost around Rs 4,000, but prices have fallen steadily since then. A 56x rated CD-ROM drive now costs between Rs 1,700 and Rs 2,500. CD-ROM drives from ASUS and Acer are amongst the best performing with data transfer speeds ranging anywhere between 2.5 MBps to 4.7 MBps for the IDE models. SCSI CD-ROM drives, though available, are not something that most mainstream users need to consider.

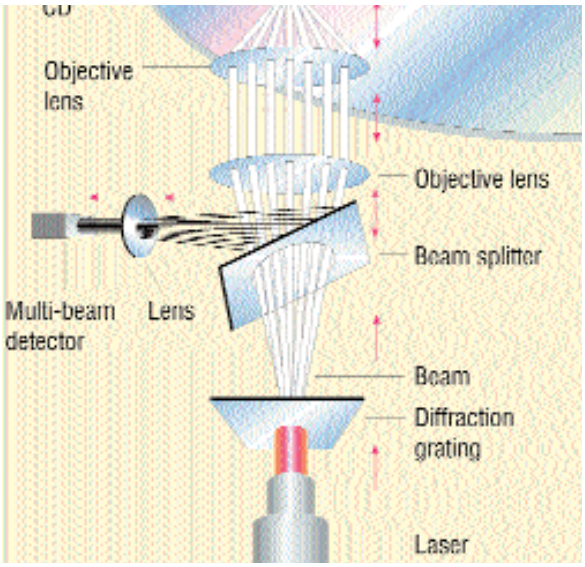
In the case of DVD drives, there is a wide variation in prices and performance. Speeds range from 6x to 16x and the differences in transfer rates are very significant. The average cost of a DVD drive is about Rs 5,500 for a 12x model. DVD drives are usually adopted by users who have easy access to DVD movies.

## TECHNOLOGY INSIGHT

A CD-ROM drive consists of a laser that is mounted on an assembly that lets it align itself onto any part of the surface of the disc as it spins. This laser reads the data which is stored in the form of a pit (0) and land (1). Additionally, there is a circuitry that performs the task of on-the-flu error correction which helps prevent errors



frequently encountered when reading scratched CDs. DVD drives differ basically due to the fact that the information density of the media is much higher.




## SMART TIPS

**Speed:** In CD-ROM drives 1x corresponds to a data transfer rate of 150 KBps. Therefore, a 52x CD-ROM drive has a theoretical peak data transfer rate of 56 x 150 KBps = 8.2 MBps

**Build quality:** Some of the cheaper CD-ROM drives have very fragile loading and unloading trays. This tends to fail over a period of time. Look for a drive with sturdy mechanisms.

| | Basic functionality | Entertainment enthusiast |
|---|---|---|
| **You need** | To use the drive to install software, play music and occasionally watch VCDs | To watch high quality movies as well as have the regular CD-ROM functionality |
| **Look for** | The fastest CD-ROM drive that you can afford | Look for a DVD-ROM that is rated at 12x or better |
| **Our pick** | ASUS CDS500 | ASUS E612 |
| **Price range** | Up to Rs 2,500 | Rs 5,000 and above |

## Also Remember...

- A notch or clasp in the drive tray that holds the media in place is a good idea if you are going to mount the drive vertically.
- Compatibility issues can come up with some CD-ROM drives which will create problems when reading from certain types of media such as CD-RW disks or other media that does not conform to the Red Book standard.



◆ CD-RW Drives ◆

# Write Choices

The reduction in cost of blank media has made CD-R and CD-RW writers an inexpensive storage option for PC enthusiasts. The 4x devices which would take around 20 minutes to burn a CD just a year ago have graduated to burning CDs in less than 5 minutes with the newer 24x units. Issues such as the buffer underrun problems associated with older drives have been solved in new writers. These drives are available in a number of different interfaces, of which IDE is the most popular due to lower overhead costs and easier installation. Other alternatives include SCSI, USB and Firewire.

The actual cost of the CD writers has come down due to increased competition between vendors and they range between Rs 6,000 for basic 8x units to Rs 20,000 for the blazingly fast 24x models.

## Also Remember...

■ Types of media that can be used are CD-R and CD-RW. The advantage of the more expensive CD-RW media is that it is reusable.

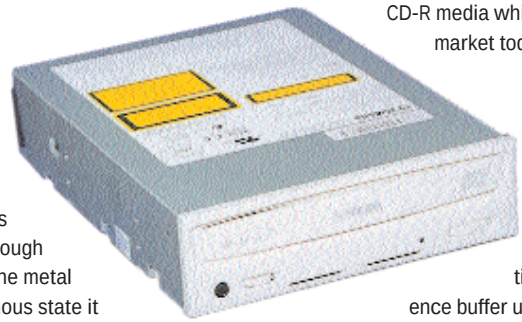
■ If you are planning to buy a writer that is faster than 8x then you might find that your system is incapable of feeding the writer with data at the required rate. This is usually due to slower hard drives, low processing power and limited RAM.

■ Most manufacturers provide regular firmware upgrades on their Web sites for their drives ensuring that they are capable of using the latest types of media and formats.

■ 700 MB CD-Rs are now available at the same cost as the regular 650 MB media.

### TECHNOLOGY INSIGHT

CD-Writers are similar to regular CD-ROM drives except that they let you burn the data on blank media. The media has a compound layer which in the crystalline state allows the laser beam to pass through and reflects it back from the metal layer. When in the amorphous state it doesn't allow reflection of light. This describes the 1 and 0 states of information storage. The laser beam is powerful enough to melt the dye of the media for writing but the intensity of beam needed for erasing information is somewhat lower.



### SMART TIPS

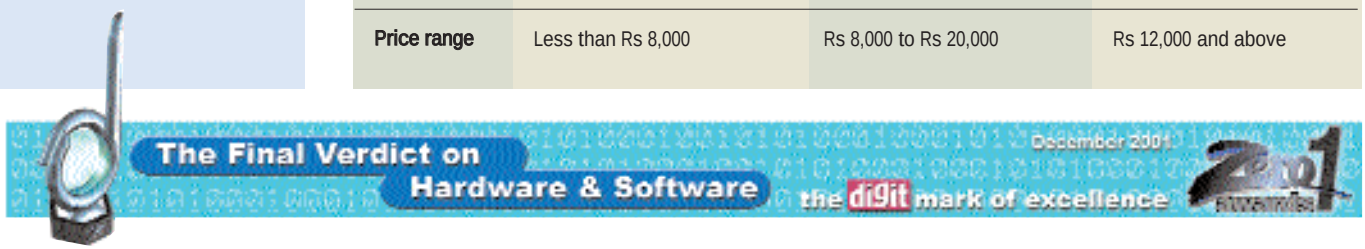
**Speed:** The fastest recording speed currently available in the market is 24x whereas 10x is the fastest rewrite speed available. The media that supports these speeds, however, is not widely available. The fastest CD-R media which is freely available in the market today is 16x.

**Interface:** IDE is the least expensive and most popular option. SCSI models require an additional SCSI card to be installed but result in lower CPU utilisation and do not usually experience buffer underrun problems. External models tend to use the USB interface.

**BURN proof technology:** Most new CD-Writers incorporate some form of BURN proof technology but the effectiveness tends to vary. From our experience, the Plextor drives are particularly good in this respect.

**Bundled software:** Some CD authoring software is bundled with every drive. These could either be proprietary or a third-party product. Adaptec's EasyCD Creator and Ahead Software's Nero Burning ROM are the most popular of these.

| | Inexpensive data backup | Speed demon | Portability |
|---|---|---|---|
| **You need** | Speed is not an issue; you are just looking for a cheap, reliable backup solution | Speed is everything, and you have no intention of spending more than 5-6 minutes to burn a CD. | To regularly back up data from different PCs. |
| **Look for** | An 8x drive | Preferably 16x or higher write speeds, and a SCSI interface. | A compact, external drive with a USB interface. |
| **Our pick** | Samsung SW-208 | HP 9700i (16/10/40x), ACeR CRW 1610A (16/10/40X) | Acer 6424 |
| **Price range** | Less than Rs 8,000 | Rs 8,000 to Rs 20,000 | Rs 12,000 and above |



# Delightful Displays

## Also Remember...

■ Warranties from manufacturers are usually valid for one year. However, some manufacturers such as Microtek and LG offer a three- year warranty on their products.

■ Integrated speakers, USB ports and a user friendly On Screen Display are other features that you might want to consider.

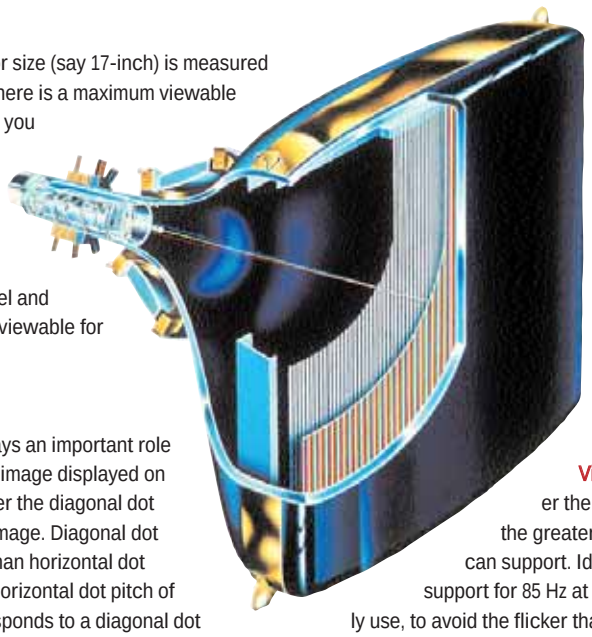
■ Models that come with 'flat' picture tubes are generally more expensive.

This is the bulkiest and costliest component of any PC. Since you don't really go around changing your monitor every other month, it pays to make the right choice the first time around. There are basically two technologies being used in CRT displays today— the more widely used shadow mask technology and Sony's proprietary Aperture Grille technology. The latter produces crisper and more realistic images.

Monitors are usually bought by size with the 14- and 15-inch models being the most common. 17-inch models are seeing a massive growth in popularity, while 19- and 21-inch monitors are the preserve of graphic and design professionals.

**SMART TIPS**

**Viewable area:** Monitor size (say 17-inch) is measured diagonally. However, there is a maximum viewable area specification that you need to pay closer attention to in CRT monitors. This would be in the region of about 13.8 inch viewable for a 15-inch model and close to about 16 inch viewable for most 17-inch monitors.

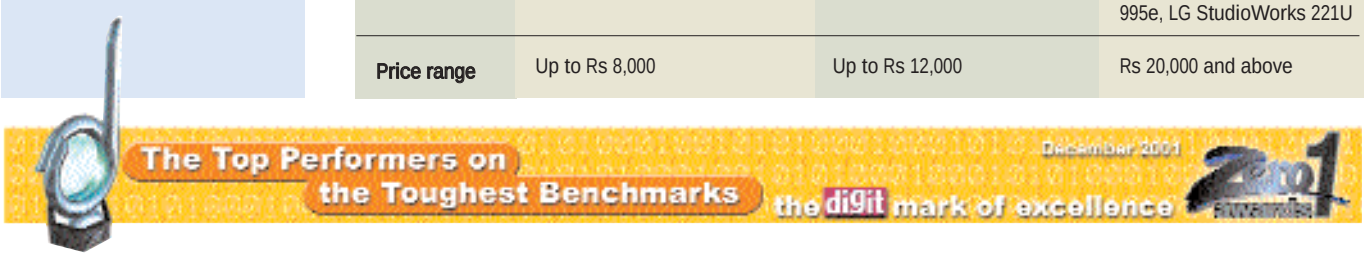


**Dot pitch:** Dot pitch plays an important role in the crispness of the image displayed on the monitor. The smaller the diagonal dot pitch, the crisper the image. Diagonal dot pitch is more critical than horizontal dot pitch. For instance, a horizontal dot pitch of 0.24 mm usually corresponds to a diagonal dot pitch of approximately 0.28 mm. Most 15-inch monitors come with 0.28 mm diagonal dot pitch, whereas for the 17-inch models it's between 0.24 mm to 0.28 mm.

**Screen Geometry:** Screen geometry refers to the proper display of shapes such as circles, squares and polygons. The monitor should be capable of displaying images without any geometric distortion. In inferior monitors you will find that circles end up looking slightly elliptical in shape.

**Video bandwidth:** The higher the bandwidth of the monitor, the greater the range of resolutions it can support. Ideally, you should look for support for 85 Hz at the resolution you normally use, to avoid the flicker that will invariably take place at refresh rates of 60 Hz. This can add considerably to reducing fatigue, especially for people that spend a major part of the day sitting in front of their computers.

| | Office productivity | Home and Internet | Graphics and design professionals |
|---|---|---|---|
| **You need** | A display that reproduces crisp text for office applications | You are looking for display that fits into your overall PC budget. | A large display with a high resolution support and excellent colour reproduction |
| **Look for** | 15-inch monitors | 14--inch, 15-inch, or 17-inch monitors | 19-inch, or 21-inch monitors |
| **Our pick** | ViewSonic E53 | ViewSonic PS775, Philips 107T | Samsung SyncMaster 955DF, LG StudioWorks 995e, LG StudioWorks 221U |
| **Price range** | Up to Rs 8,000 | Up to Rs 12,000 | Rs 20,000 and above |



# Trigger Happy

As little as two years ago anyone buying a digital camera would have had to put down as much as Rs 50,000 for a VGA camera with just 2-4 MB of storage space. These early models were very inefficient in power usage and tended to need a replacement of batteries after every few shots. Other features such as zooming, which are common in regular cameras, were also missing. However, in the current market, most mainstream cameras give you mega-pixel resolution (more than 1 million pixels), better battery life and even optical zoom lenses, all for as little as Rs 25,000. While Kodak and Sony are the leading manufacturers, Models from Nikon, Olympus and Epson are also available.

## Also Remember...

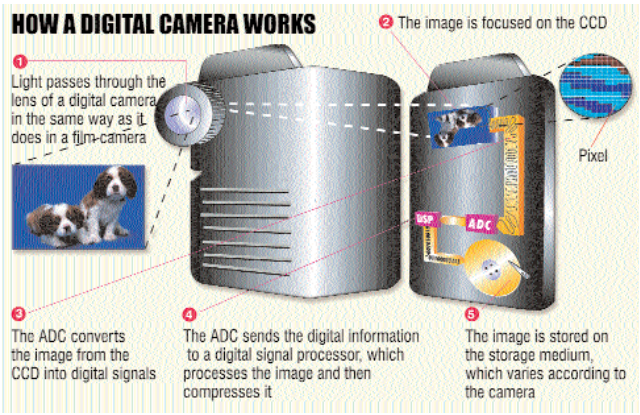
- Memory upgrade could be available in the form of a Compact Flash card, Smart Media or Sony's Memory Stick. Some cameras don't allow upgrading, which is a severe limitation.
- Optical zooming is all that counts. Don't take the electronic zoom function too seriously.
- Floppies for storage aren't a great idea because they tend to be very unreliable, not to mention the limited capacity.
- Look for features such as printing directly from the camera through a special cable, taking sepia photographs, setting the shutter speed, selecting macro modes, auto focus, etc. Some cameras even let you capture short video clips.

### TECHNOLOGY INSIGHT

**Sensor type:** Digital cameras (or filmless cameras) use either a CCD or CMOS sensor which captures light and converts it into electrical charge to capture an image. CCD sensors lead to higher quality images. The size of a CCD sensor is approximately 4.4x6.6 mm as against the 24x36 mm size of the regular film.

### SMART TIPS

**Resolution:** This is often expressed in megapixels. For example, 2.1 megapixels correspond to about 1600x1200 pixels.




**Memory:** Since cameras come with limited built-in memory (between 8-16 MB), this becomes a limitation when you are taking photos at higher resolution settings. At 1600x1200 you'd be able to store just one or two images in the TIFF format.

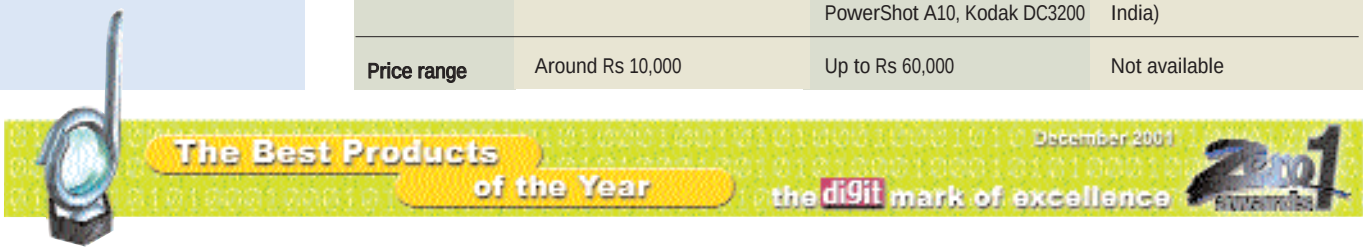
**Interface:** Connection to the computer is via USB or parallel port. The USB interface is preferable due to greater convenience and higher data rates.

**Power:** You will need a set of rechargeable batteries because the consumption tends to be high, especially when you are using the LCD viewfinder. Some manufacturers ship their cameras with power adapters which is pretty useful when you are shooting indoors.

**Separate monochrome display:** It makes sense to have a separate monochrome display for camera status when you are trying to conserve your batteries by switching off the LCD screen.

**Viewfinder:** Some cameras have a regular viewfinder in addition to the small LCD screen that also serves this purpose.

| | Casual user | Photography enthusiast | Professional |
|---|---|---|---|
| **You need** | To be able to take photos to compile personal albums or publish to the Web | High-quality images which you intend to print. | Very high quality photographs with onboard adjustment for colour and contrast |
| **Look for** | Between 640x480 and 1024x768 resolution and 2 MB memory; maybe one that doubles as a Web cam | 1280x1024 resolution with at least 2x optical zoom and 8 MB storage | 2048x2048 or higher with special lens options and a minimum 16 MB memory |
| **Our pick** | Intel Pocket PC Camera | Sony DSC-PI, Canon PowerShot A10, Kodak DC3200 | Nikon D1X (not available in India) |
| **Price range** | Around Rs 10,000 | Up to Rs 60,000 | Not available |



# Reserve Storage

Whether you need to back up important files or transport data from one computer to another, a wide array of external storage options are available to you. From a few megabytes of data to several gigabytes, you can be sure to find a unit that suits your storage requirements and, at the same time, remain budget-friendly.

There are a number of mediums available that facilitate storage of data outside your computer.

## Also Remember...

- Some newer digital cameras in the market now provide support for varied media types such as Iomega's 40 MB Clik! disc, miniature CDs and memory cards to store images. The same media can also be used in PC-based drives for storage and retrieval of conventional data.
- Cost of consumables varies from Rs 350 (for 100 MB Zip media) to Rs. 5,500 for the 2 GB Jaz discs.

### SMART TIPS

**Capacity:** This really depends on your application, or the quantities of data you need to back up. There is no real need to go overboard on storage capacity because prices tend to get on the higher side for both the media and the devices themselves.



Iomega's Zip drives, for example, are quite popular. The other options are the newer, Flash-memory based drives that utilise the USB port on any PC and make data portability even simpler.

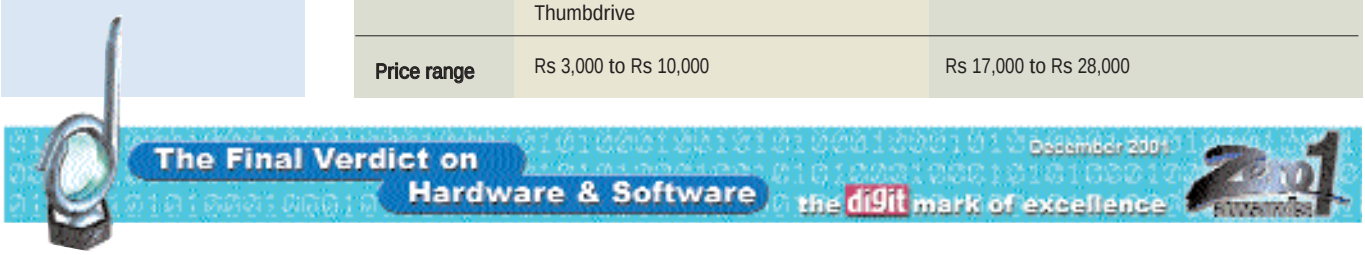
**Durability:** Media that is enclosed in a casing of sorts will withstand the test of time better than exposed media. CD-ROM discs, which are the most popular means of data storage nowadays, are highly susceptible to scratches, which means that they could be rendered unusable after a short period of time.

**Portability:** If you share your data with others, it makes sense to consider options that are in widespread use.

**Speed:** Random access media such as hard drives, CD flavours and cartridges have the advantage of quick access to data stored on the media. If you have larger data backup requirements then go for a drive with higher speed to save time.

**Interface:** There are a wide variety of interface that are available, with options ranging from the parallel port to SCSI, USB and IEEE 1394 (or Firewire). While USB and parallel port drives work on most PCs the SCSI and Firewire give you faster transfer speeds. However, you will require either an adapter or a special port to use these.

| | Focus on cost-effectivenes | Focus on capacity/speed |
|---|---|---|
| **You need** | Basic portability to transfer small to medium sized files. | Large data storage capacity and you will go for the maximum capacity available. Speed becomes a top concern as well. Price is not a problem. |
| **Look for** | Devices with a low price point and a storage capacity of 40 to 250 MB of data. USB is a better option. | A drive that can store approximately 1 to 2 GB of data on a single disc; SCSI or FireWire connectivity. |
| **Our pick** | Iomega Zip drive, Iomega Click!, Trekstore Thumbdrive | Iomega Jaz drive, Castlewood ORB drives |
| **Price range** | Rs 3,000 to Rs 10,000 | Rs 17,000 to Rs 28,000 |



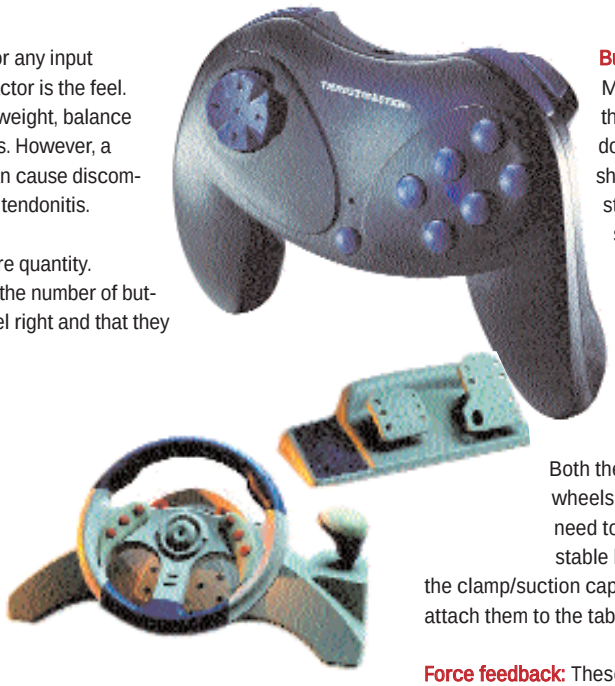
# Are you Game?

There are three primary types of controllers—Wheels, Joysticks and Game pads—each of which is best suited to certain game genres. A joystick is the ideal choice for flight simulators while game pads and wheels are better suited for driving games. Most first person action games, on the other hand, are still best played with a mouse and keyboard combination. Microsoft and Logitech might be the big boys but a lot of other smaller brands such as JS Equipments have solid reliable units too.

**SMART TIPS**

**Ergonomics (and Weight):** For any input device the most important factor is the feel. This is a combination of the weight, balance and placement of the buttons. However, a badly designed controller can cause discomfort and in some cases even tendonitis.

**Buttons:** Quality comes before quantity. Before getting overawed by the number of buttons, check whether they feel right and that they are placed conveniently.



**Configuration/Drivers:** While a lot of these devices will work with the generic Windows drivers, device-specific drivers will allow you to calibrate, configure and optimise controller performance.

**Connector:** While the most common connectors use the joystick port that is present in most soundcards (even the onboard ones), USB-compatible devices are becoming increasingly popular.

**Build quality:** Make sure that the controller does not have sharp edges. Joysticks and wheels see a lot of rough handling and need to be particularly sturdy.

**Fastening mechanism:** Both the steering wheels and joysticks need to be fixed to a stable base. Check that the clamp/suction caps that will attach them to the table are sturdy.

**Force feedback:** These controllers are much more expensive that then regular ones but add considerable realism to the game play in arcade, driving and flight simulation games.

| | Steering wheels | Joysticks | Gamepads |
|---|---|---|---|
| **You need** | Driving games | Flight sims, arcade games | Sports, driving, arcade games |
| **Look for** | Sturdy gearshift lever, foot pedals and a strong clamping mechanism. Check for the comfort of the steering grip and easily accessible buttons | Look for at least six configurable buttons, a POV hat and eight-way direction control. Check for sturdy suction caps. | The most important criteria is the comfort of the grip. Also make sure that you have at least 8 buttons in addition to the D-Pad. |
| **Our pick** | Logitech WingMan Formula Force<br>Microsoft SideWinder Steering Wheel | Microsoft SideWinder Force Feedback 2.0 Logitech WingMan Extreme Digital 3D | Microsoft PnP Gamepad (USB)<br>JS Equipment |
| **Price range** | Rs 6,000 to Rs 9,500 | Rs 2,500 to Rs 7,500 | Rs 600 to Rs 1,500 |

## Also Remember...

- A long cable on your controller allows you flexibility in the placement of the device and sufficient mobility for some of the more engrossing games.
- Left-handed users will find that most of the devices are designed primarily for right-handed gamers.
- You can choose between digital and analogue units of which the digital controllers are easier to calibrate and provide a more precise response.



# Video Vanguard

With the demise of 3dfx and with Matrox deciding to concentrate on 2D solutions, ATi and nVidia are the only high-end graphics card chip manufacturers remaining. Competition has surprisingly been not more in terms of technology but in terms of card manufacturers trying to outdo each other by trying to offer the best possible solution at a particular price point. Since ATi sells cards under its own brand name, the various card manufacturers primarily depend only on nVidia for their chipsets.

Mainstream desktop display solutions starting from Rs 1,500 to Rs 36,000 are now available in the market with a great number of manufacturers offering a wide variety of solutions in the low to mid segments. This was not the case in earlier times as you had to choose between cheap, low-powered solutions or very expensive models. However, with an increase in competition, the choices available have now improved significantly.

## Also Remember...

■ All video cards use a VGA output connector that allows the signal to be displayed on a monitor. Some cards supply and receive the video signal from television monitors, projectors and video cameras through optional coaxial or S-video interfaces.

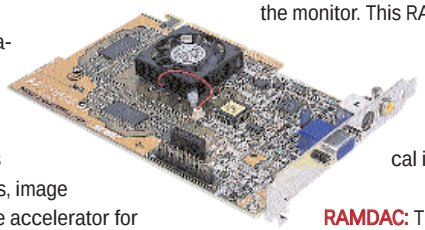
■ The feature connector exists on some cards and supports devices a TV tuner or a video capture board. A special connector is used to connect the video card to these additional devices through a flat ribbon cable.

■ Memory bandwidth refers to the rate at which data is transferred between the graphics processor and graphics memory. If you have a card that utilises DDR SDRAM, operating at an effective rate of 301 MHz (say the GeForce DDR), you can calculate its memory bandwidth as follows:
128-bit (16 bytes) x 301 MHz = 16 x 301 = 4.81 GBps
Compared to 460 MHz (for the Geforce2 ULTRA), where
128-bit (16 bytes) x 460 MHz = 16 x 460 = 7.36 GBps
Compared to 125 MHz (for the TNT2 M64), where
64-bit (16 bytes) x 125 MHz = 8 x 125 = 1 GBps

This clearly illustrates the difference that the memory speed causes on the total memory bandwidth available.

### TECHNOLOGY INSIGHT

The main aim of a graphics accelerator is to process the 2D/3D elements associated with the GUI and applications such as a game or software. The execution of graphics involves the transfer of texture maps, image geometry, commands etc over to the accelerator for processing.



### SMART TIPS

**Graphics processor:** The core of a graphics card, this is the component that actually processes the video information that is sent to it. Some of the best graphics processors in the market are the nVidia GeForce3, ATi Radeon 8500 and the 3dfxVoodoo 5 6000.

**Video RAM:** Video RAM on the graphics card is used to store the extensive graphical information like textures of the 3D objects. It is also used in the frame buffer, the part that holds the final frame that is to be displayed on the monitor. This RAM is very similar to the one used as the main memory of your system, except that it is faster and optimised for working with video and graphical information.

**RAMDAC:** The Random Access Memory Digital to Analog Converter is that chip on the graphics card which converts the digital information in the frame buffer (video memory) into a signal that can be displayed on your monitor. The RAMDAC on a graphics accelerator is specified by a frequency. The higher the frequency of the RAMDAC, the greater are the resolutions and the refresh rates that can be supported by the card.

**Interface:** The best choice available today is the AGP interface, which provides a very high-speed pathway for moving large quantities of graphic and image data between the graphics card and the rest of the system.

| | Limited budget (support for decent refresh rates at low to medium resolutions) | Should run most games, but price is a consideration | Top-notch performance in 2D/3D, price no bar! |
|---|---|---|---|
| **You need** | A card that will run at 32-bit high colour at 1024x768 at 85 Hz with support for the odd game at low resolutions | A card that will give you a minimum of 30 fps in low to medium resolutions with a little compromise in quality | Maximum performance with all the eye candy enabled and no compromise on either resolution or quality |
| **Look for** | Cheaper or lower variants of faster chips. At least a card using the AGP interface with minimum 8 MB onboard RAM | A card with at least 16 MB or more memory running at 100 MHz or higher | A card with 32-64 MB RAM running at 166 MHz (preferably DDR); with deluxe features like VIVO and stereo glasses |
| **Our pick** | Galaxy Riva TNT2 M64 | AOpen PA256 GeForce2 MX | ASUS AGP V7700 GeForce2 GTS, ASUS AGP V8200 GeForce3 Deluxe |
| **Price range** | Up to Rs 2,500 | From Rs 2,500 to Rs 8,000 | Rs 8,000 to Rs 36,000 |



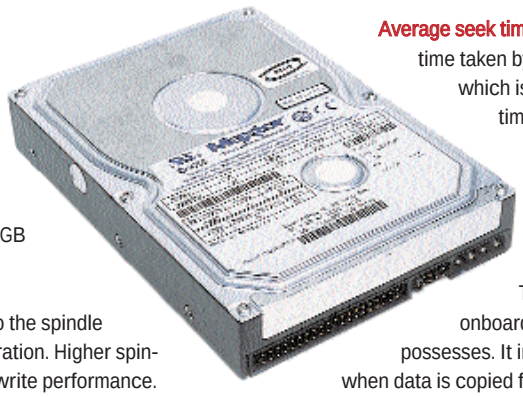
# Pick a Platter

Some of the most dramatic decreases in prices of computer hardware have been that of hard disk drives. You can now get an entry-level 20 GB IDE hard disk for as little as Rs 4,600, which is just 25 paise per MB! The entry-level 5400 rpm drives deliver sequential read/write speeds of about 25MBps which is sufficient for applications like word processors, Internet surfing, etc. These drives are at least ATA/66 compliant (which implies a peak theoretical transfer rate of 66 MBps).

The higher performance 7200 rpm IDE models are generally ATA/100 compliant and are ideally suited to applications like audio and video processing. The prices for these drives begin from Rs 6,800 for a 20 GB unit. When it comes to sheer performance, however, SCSI still takes the honours with Ultra160 SCSI—a standard that promises a theoretical transfer rate of 160MBps. However, this technology comes at a price.

**SMART TIPS**

**Capacity:** For most users an entry-level 20 GB drive would be sufficient. However, IDE drives of capacity up to 100 GB are available. SCSI models are available in sizes ranging from 4.3 GB to 80 GB depending on the drive rpm.



**Rotational speed :** This refers to the spindle rpm of the drive under consideration. Higher spindle speeds lead to faster read/write performance. These range from 5400 to 7200 rpm for IDE drives and 7200 to 15000 rpm for SCSI models.

**Sustained data transfer rates:** This is a measure of the drive's performance in terms of data transfer to and from the drive. This should be about 20-30 MBps for 5400-rpm drives and 30-50 MBps for 7200-rpm drives.

**Average seek time:** This is the average time taken by the drive to access data which is stored on the drive. A time that is between 5.5 to 10 seconds is acceptable for most mainstream applications.

**Data buffer (cache):** This is the amount of onboard memory that the drive possesses. It increases transfer speeds when data is copied from one location in the drive to another. This ranges from 512 KB in the 5400-rpm drives to as much as 2 MB in the 7200-rpm IDE models.

**Motherboard/IDE controller card:** In order to tap the full potential of a hard drive, you need to make sure that your motherboard's IDE controller supports the same specification (ATA-66/100) interface.

| | General home use | Performance-hungry home and office applications | Specialist high-bandwidth applications |
|---|---|---|---|
| **You need** | A hard disk for general applications such as word processing and Internet surfing | Larger amounts of datal transfer as you're running more demanding applications like image editing and animation | A hard disk that will support applications that demand the highest in performance and reliability like video capture. |
| **Look for** | 20 GB minimum at 5400 rpm, supporting ATA-66 transfer rates. Go for the largest capacity that fits your budget | 30 GB minimum at 7200 rpm, supporting ATA-100 transfer rates. Go for the largest capacity that fits your budget | Minimum 10000-rpm drive, supporting Ultra2 SCSI or better transfer rates. Choose capacity according to your application. |
| **Our pick** | Seagate U10 20GB | Seagate Barrucudda ATA-III/IV, IBM Deskstar 75GXP | Seagate Cheetah SCSI Ultra160 |
| **Price range** | Up to Rs 6,500 | Up to Rs 10,000 | Rs 15,000 to Rs 40,000 |

## Also Remember...

- Your drives performance will see a major improvement (up to 25-30 per cent) if Direct Memory Access (DMA) is enabled in your system.
- If you are buying a SCSI drive, you will need to buy an appropriate SCSI adapter depending on the SCSI standard that the drive uses.
- Most new drives incorporate some form of noise reduction technology. This will impact drive performance by about 5-7 per cent but makes for much quieter operation.
- If you have an ATA/100 or a SCSI drive, make sure that you have the correct cables to connect your hard disk to the system. For example, an ATA/100 hard disk drive will work if you use a standard 40-pin, 40-conductor cable. However, for it to function as an ATA/100 drive, you will need a 40-pin 80-conductor cable.

The Final Verdict on Hardware & Software
December 2001
the digit mark of excellence

◆ Inkjet Printers ◆

# A Coloured World

Inkjet printers have become really popular due to the fact that they provide users with the ability to print in colour at a fraction of the cost of even basic monochrome laser printers. This popularity has been driven in large part by the fact that people with computers at home want the ability to print documents, greeting cards and photos from their personal albums.

Hewlett-Packard, Epson and Canon are some of the heavyweights in this segment. HP and Canon use a thermal inkjet printing technology, while Epson uses its own piezoelectric printing process.

Prices for entry-level inkjet printers begin from about Rs 5,000 and go up to about Rs 50,000. Most users however will probably find a suitable printer for less than Rs 15,000.

## Also Remember...

- Cartridge life is usually expressed keeping in mind just 5 per cent of the page being covered by ink. The practical life of a cartridge will vary according to type of printing done.
- Cartridge cost is an important consideration. You also need to consider the cost of exchanging a print head, which is almost half the cost of the printer. The average lifecycle of a print head is around 18 months for most users.
- To judge print quality, take a look at a few sample printouts on plain paper before making a decision.
- Dpi ratings can be somewhat misleading.
- Duplexing is the ability to print on both sides of a page. It is a useful paper saving feature but usually costs extra.

### TECHNOLOGY INSIGHT

Inkjets work by impinging charged ink particles onto paper by using magnetised plates to direct the ink into the required patterns. They are well suited to producing both quality text and images. Several models are capable of printing photo realistic images, though for best results you need to use special paper.



### SMART TIPS

**Resolution:** This is measured in dots per inch, which is a rough measure of the image quality you can expect. There are image-processing techniques, however, that can improve the output quality considerably. Edge enhancement and Print Image Matching are two such technologies.

**Speed:** Print speed will vary according to the type of material that you are printing and the print mode that you have selected. Print speeds are usually inversely proportional to print quality.

**Colour:** Although low-end inkjets don't offer great quality, the high-end ones offer photo quality output when printed at high resolution on glossy paper. Although the cost of printing each colour page is higher than comparable colour laser printers, the price of the printer itself is much lower.

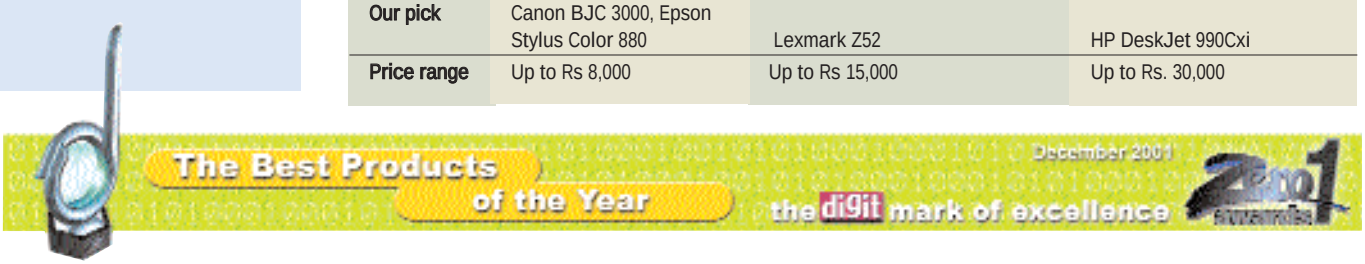
**Connections:** Check to see that your computer has the right kind of port for the printer you have selected. While newer models have USB ports, the parallel port models are also quite common. For networks, a printer should be able connect directly to the network.

**Paper and ink capacity:** The cost of consumables for inkjet printers can be quite high and cartridges will need regular replacement. Low-end printers use a single colour cartridge that requires replacement whenever any one of the three colours runs out. High-end printers use separate cartridges for each ink type.

**Paper handling:** Check that the printer can accommodate the paper sizes and volumes you plan to use.

**Memory:** Printers come with a buffer (RAM), which is a temporary store for information. A larger buffer allows storage of high-resolution documents or a larger number of regular documents.

| | Home use | Intermediate (under Rs 15,000) | Photorealistic printing (under Rs 30,000) |
|---|---|---|---|
| **You need** | Average output quality and you are OK with slow speeds. A low purchase price is important | Faster printing and are willing to pay a little extra for larger paper size options and higher print quality | Something that can give you photorealistic printouts and are not willing to compromise on quality |
| **Look for** | An A4 printer with the ability to print colour. Resolution of 1440x720 dpi would be sufficient | Faster print speeds and options such as photo cartridges or larger paper sizes up to A3. These printers offer better print quality and longer life per ink cartridge | Printers with resolution in the order of 1200x1200 dpi, 2400x1200 dpi, or 2880x1440 dpi. You might want the option of six-colour printing |
| **Our pick** | Canon BJC 3000, Epson Stylus Color 880 | Lexmark Z52 | HP DeskJet 990Cxi |
| **Price range** | Up to Rs 8,000 | Up to Rs 15,000 | Up to Rs. 30,000 |



# A Key to Comfort

The market as of now is full of choices as far as keyboards are concerned. You can find a cheap, no-frills keyboard that is sturdy and does the job at a rock bottom price of Rs 300. At the other end of the spectrum, you can also find a feature-rich keyboard loaded with shortcut keys and USB ports built in, which could cost you up to Rs 3,500.

Samsung offers some of the sturdiest keyboards, though Acer keyboards are also a good choice if you are looking for a value solution. If you want good looks along with a reasonable choice of features then you could go in for keyboards from Maple or Logitech.

There are several types to choose from, including the normal 104-button PS/2 keyboards and the newer cordless models that use radio waves or infrared rays to communicate.

## TECHNOLOGY INSIGHT

### Layout

The QWERTY layout is the most popular one in business, but some people prefer the ergonomic models. The Natural and split keyboards from Microsoft are examples of these.

## SMART TIPS

**Keyboard construction:** This can be critical in terms of reducing the chance of stress-related injuries. The choices available include mechanical keyboards, which are more responsive but tend to be noisier and membrane keyboards, which are quieter and more comfortable to type with.

**Connectors:** Most keyboards have switched to the PS/2 connector format, but if you have an older PC you might have a port which requires an old AT style connector. If you have a free USB port you could consider a more expensive USB compatible model.



| | General use | Heavy user | Neat and tidy |
|---|---|---|---|
| **You need** | To do small amounts of typing and use your machine primarily for the Internet | To do large volumes of typing tasks and you are a heavy user of the keyboard | A neat keyboard. You just can't stand the mess caused by a tangle of cables |
| **Look for** | A standard 104-key keyboard preferably with configurable shortcut keys. | An ergonomically designed keyboard to avoid stress-related injuries | Infrared or radio frequency based cordless keyboards |
| **Our pick** | Samsung SDL1500 | Microsoft Natural Keyboard | Logitech Cordless Freedom Navigator |
| **Price range** | Up to Rs 500 | Up to Rs 3,000 | Up to Rs 5,000 |

## Also Remember...

- Learning to type on any of the ergonomic keyboards can take a while and may not be worth the effort unless you do a lot of typing.
- Not all keyboards come with a palmrest but this provides the user with some comfort while typing for prolonged periods. They are now available even with some of the lowest priced models.
- While shortcut keys (custom keys) can be useful for everyone, they are especially useful for those who don't have a clue about the regular Windows and Internet shortcut key combinations.



◆ Laser Printers ◆

# Laser Lites

While laser printers are still primarily used in office environments, they also find appeal where people are looking for fast, high-quality, economical and hassle-free printing. While colour laser printers are way out of the reach of most of us, an entry-level monochrome model is now pretty affordable.

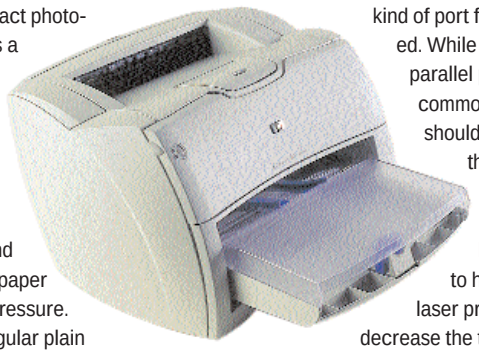
HP, Lexmark, Canon and Xerox are firmly established players in a segment that has seen new entrants such as Epson. Prices begin from about Rs 17,000 for a basic laser printer and go up to over Rs 1,00,000 for a full-blown network printer.

## Also Remember...

- Cartridge life is usually expressed keeping in mind just 5 per cent of the page being covered by ink. The practical life of a cartridge will vary according to type of printing done.
- Duplexing and ADF: This is the ability to print on both sides of a page. It is a useful paper saving feature but usually costs slightly more, although some high-end laser printers include duplexing as a built-in feature.

### TECHNOLOGY INSIGHT

A laser printer uses a non-impact photo-copier type technology. It uses a laser beam to draw the document on a selenium-coated drum using electrical charges. The drum is then rolled in toner (a dry powder-like ink). The toner adheres to the charged image on the drum and is transferred onto a piece of paper and fused to it with heat and pressure. The final result is just like a regular plain paper print.



### SMART TIPS

**Resolution:** The entry level resolution for laser printers nowadays is about 600x600 dpi. For high-end printers the resolution can be as high as 1200x1200 dpi. In laser printers, a 600 dpi text printout can supersede an Inkjet printer's output at similar resolutions in terms of quality and sharpness, as there isn't any smudging or spreading of ink.

**Speed:** Print speed will vary according to the type of images and the print mode that you have selected. Laser printers offer speeds much higher than their Inkjet counterparts. Beginning at about 6 pages per minute (ppm), the speed can go as high as 45 ppm or more.

**Connections:** Check that your computer has the right kind of port for the printer you have selected. While newer models have USB ports, parallel port models are also quite common. For networks, a printer should be able to connect directly to the network and support the kind of protocols you use.

**Postscript:** It is very important to have postscript support in a laser printer. This can considerably decrease the time taken to print vector graphics—a decided advantage as laser printers are often used in pre-press set-ups and other such graphics-intensive print processes to create colour separation prints etc.

**Paper and toner capacity:** The cost of consumables can be quite high if you plan not to use refilled toner cartridges. As laser printers operate at considerably higher speeds and handle heavy print loads, it is necessary to have larger paper trays/multiple paper trays as well as output bins. Check that the printer can accommodate the paper sizes and volumes you plan to use.

**Memory:** Printers come with a buffer (RAM), which is a temporary store for information. A larger buffer allows storage of high-resolution documents or a larger number of regular documents.

| | Medium volume printing | Heavy-duty printing |
|---|---|---|
| **You need** | Average output quality and are satisfied with slow speeds as long as it is at a low purchase price | Faster printing and are willing to pay extra for higher print quality |
| **Look for** | An A4 only printer with a resolution of 600X1200 dpi | Faster print speeds and higer resolution (about 1200x1200) and the ability to handle larger print loads |
| **Our pick** | Minolta QMS PagePro 1100 | Lexmark Optra M412, HP LaserJet 1220se |
| **Price range** | Up to Rs. 20,000 | Up to Rs. 50,000 |



# The Right Base

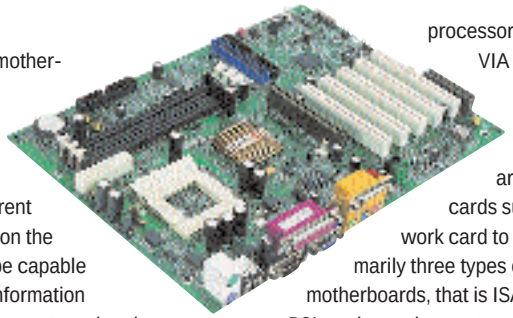
The scenario in the motherboard market has radically changed over the past one year or so. It is a change similar to the Indian automobile market where Indian consumers, who had just a couple of choices earlier, could choose from a glut of cars available after liberalisation. There are now choices for every single type of consumer need, beginning from simple 'Plain Jane' motherboards to fully featured powerhouses for every single type of mainstream processor. However, keeping ahead of the technology curve for motherboards could mean investing thousands of rupees each year. There are ways in which you can avoid this constant upheaval of hardware and it begins by choosing the right technology and feature set. This alone can ensure that your PC is ready to tackle the next-generation hardware. You can now also find a lot of boards and brands offering platforms for the AMD processors.

## Also Remember...

- Look for onboard USB ports and options for additional USB ports.
- Check for the maximum CPU speed supported.
- Onboard thermal and fan speed monitoring (for servers and power users).
- Voltage and Bus speed tweaking (for the overclockers).
- ATX or BABY AT (ATX power supply has better power management features).
- Check for ACPI compliant BIOS (for better power management).
- Number of IDE devices supported. The higher the better.
- Support for Ultra ATA-100, ATA-66 IDE standards.
- Check for the highest FSB (Front Side Bus) speed supported.
- Support for ECC (Error Correction Capability) RAM.
- Integrated features such as onboard soundcard and display card (for SoHo users).
- Look for features like Wake-on-Modem-ring (integrated into the BIOS) that allows the computer to power on automatically for receiving faxes.

## TECHNOLOGY INSIGHT

The primary function of the motherboard is to be able to provide a substrate upon which other components such as the processor and RAM can reside. Since different types of components reside on the motherboard, it also has to be capable of coordinating the flow of information between these various components and orchestrate the transfer of data and information within the system.



## SMART TIPS

**Processor interface:** This is the socket on the motherboard that is used to mount the processor on the board. If categorised according to processor interface, there are generally five types of slots available: Socket 7, Socket 370, Socket A, Slot 1 and Slot A.

**Chipset:** Different chipsets are used to support functions that are offered by the board, the RAM and, more importantly, the processor used in the system. For example, the Intel i815e chipset supports Pentium III (Coppermine) and Celeron processors up to 1 GHz. AMD processors (Duron and Athlon) require VIA KT133 chipset based motherboards.

**Interface slots:** These slots are used to connect add-on cards such as a soundcard or a network card to the computer. There are primarily three types of slots found on today's motherboards, that is ISA (fading away), PCI and AGP. PCI cards are the most common. The AGP interface is meant solely for high-speed graphics cards.

**RAM slots:** SDRAM is the most popular option although DDR-SDRAM is slowly making headway. Most boards have at least two slots, but more expensive models have four slots for RAM. The total amount of RAM that you can install is also dependant on your motherboard chipset.

**BIOS:** Every motherboard carries a special circuitry called the BIOS (Basic Input Output System) that exists on a ROM chip. The 'jumperless' motherboards that are the norm today, allow all parameters—ranging from the processor core voltage and clock multiplier to the configuration and control of the integrated peripherals—to be automatically detected and configured.

| | Bare necessities | Amateur enthusiast | Performance seeker |
|---|---|---|---|
| **You need** | Basic support for current processors and peripherals | Flexibility and upgradeability | Maximum performance and overclockability |
| **Look for** | Minimum 3 PCI slots with integrated sound and video in the Micro-ATX format | Minimum five PCI slots, three RAM slots, an AGP 4x slot, in the ATX format. | The latest chipset for your processor and options for easy over clocking |
| **Our pick** | Mercury KOB815FST (Intel), DFI AM35EC (AMD) | Soltek SL65ME (Intel), Soltek SL75KAV (AMD), AOpen AX4T (Pentium 4) | ASUS CUSL2 (Intel), ASUS A7V133 (AMD), ASUS P4T (Pentium 4) |
| **Price range** | Rs 3,000 to Rs 5,000 | Rs 5,000 to Rs 8,000 | Rs 8,000 and above |



MP3 Players

# Shades of Music

When they first entered the Indian market, these devices were exorbitantly priced, but this scenario is changing. With the explosion in the number of such devices available abroad, a ripple effect is being seen here in the Indian markets, with prices dropping and greater variety available.

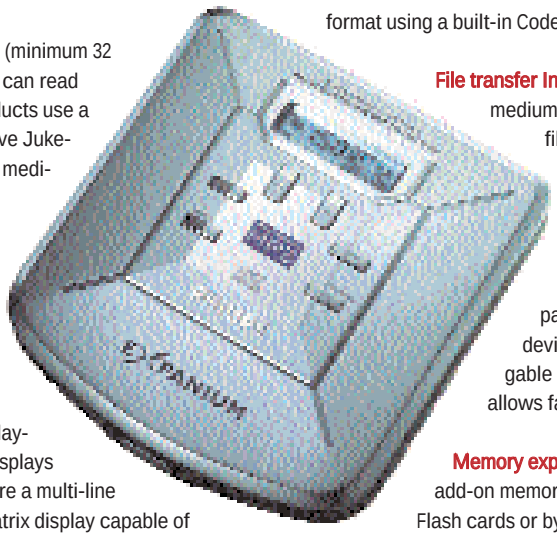
The most commonly available MP3 players are the solid-state devices with storage capacity beginning from 32 MB. There are two major Flash RAM standards in use today—Compact Flash and the newer Smart Media. Since memory is the most expensive component of an MP3 player, it has a major impact on the overall cost of the device. Popular brands in India include Creative and Diamond's Rio. The prices range from Rs 8,000 to Rs 25,000.

## Also Remember...

- Some devices come with voice recording capability. This would allow you to use the player as a dictaphone.
- Built-in FM tuner is a useful feature on a long journey when you have had your fill of the songs stored in the player's memory.
- It is useful if the MP3 player can play back other file formats such as WMA.
- Make sure that you have the right port (parallel or USB) free on your PC.
- Encoding your own MP3s is a very CPU-intensive task. Make sure that you have a reasonably powerful processor (at least 400 MHz) on your PC. Otherwise it would take you quite a while to encode or transfer MP3s.

### TECHNOLOGY INSIGHT

Most devices use Flash RAM (minimum 32 MB) but some newer models can read MP3 CDs instead. A few products use a hard disk (6 GB for the Creative Jukebox) as their primary storage medium. Flash memory, however, completely eliminates skipping.




### SMART TIPS

**LCD screen:** A backlit display that allows you to view track and status information is very useful. Most players have single or two-line displays but some (like the Lyra) feature a multi-line 16-character by 6-line dot matrix display capable of displaying ASCII characters.

**Control and menu navigation keys:** Similar to regular CD players, you have buttons for functions such as Play, Stop, Forward, Rewind, Search, Random, Programmable tracks, etc. Additional shortcut and navigation keys are a welcome addition.

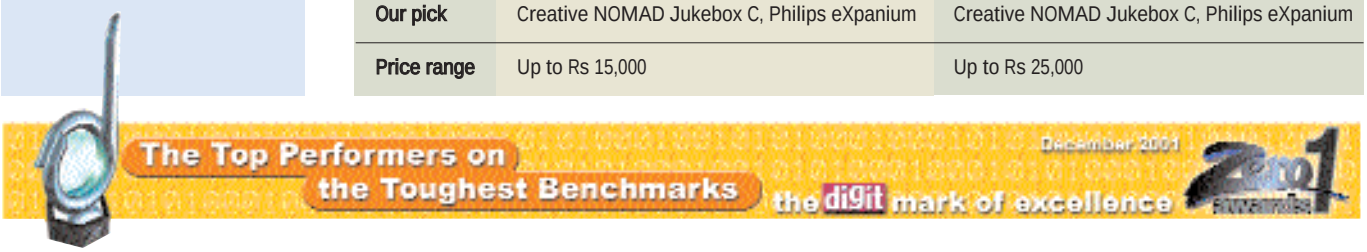
**Batteries:** The digital signal processor forms the heart of the MP3 player and performs the task of decoding, processing and converting the MP3 data into audible audio format using a built-in Codec.

**File transfer Interface:** This is the medium for the transfer of MP3 files between the player and your PC. The most popular method is through a serial cable, which connects to your PC's parallel port. Newer devices use the hot-pluggable USB interface, which allows faster file transfers.

**Memory expansion:** You can buy add-on memory modules (Compact Flash cards or by Flash RAM) depending upon the standard supported by the device. Make sure that the player supports memory upgrades in case you decide you need it in the future.

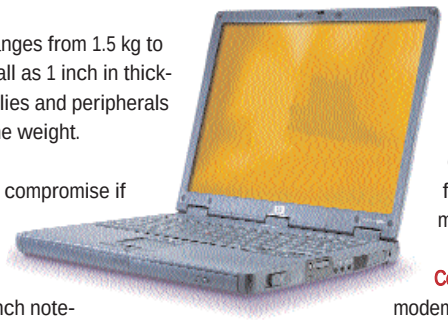
**Headphones:** The headphones that come bundled with most MP3 players are usually of a low quality. If you are a connoisseur you should look around for better-quality headphones from brands like Sony, Sennheiser or Koss. Here again, make sure that you actually try out the headphones with the device before you actually put down the money for it.

| | Easy listening | Music enthusiast |
|---|---|---|
| **You need** | A player that lets you play MP3 tracks when you are on the move. | A player that you intend to live with and want your entire music collection accessible. |
| **Look for** | A player that uses Flash RAM and has at least 64MB of memory with the option to upgrade | A player that uses either a hard-disk or CDs as the medium for storing music |
| **Our pick** | Creative NOMAD Jukebox C, Philips eXpanium | Creative NOMAD Jukebox C, Philips eXpanium |
| **Price range** | Up to Rs 15,000 | Up to Rs 25,000 |



# Note Perfect

Notebooks come at a premium, but for anyone who needs to be mobile, it's a premium that's worth paying. Laptops generally lag considerably behind desktop PCs in absolute performance and upgrades can be really expensive. Four manufacturers, namely Compaq, Toshiba, IBM, and Dell dominate the international laptop market. Most of the laptops however, are actually manufactured in Taiwan.



**SMART TIPS**

**Size/weight:** The weight ranges from 1.5 kg to 4 kg and it could be as small as 1 inch in thickness. External power supplies and peripherals can add considerably to the weight.

**Display:** This will require a compromise if you decide on an ultra-portable model. Most diplays now support 1024x768 pixels and a 14-inch notebook display may be larger than most 15-inch desktop CRT units.

**Processor:** While the Crusoe, Duron and Athlon 4 mobile processors are available, Intel P-III and Celeron processors are more popular.

**Battery:** Realistically, the up time for most lithium ion battery powered models would be about three to four hours.

**Keyboard:** If you are going to be doing a lot of typing, a larger keyboard will add considerably to your comfort. Having the eight cursor-control keys is very important.

**Drives/bays:** Makes sense to have all the drives (floppy, DVD/CD ROM) built into the main casing. However, a hot-swappable bay gives you greater flexibility.

**Hard drive:** Capacity ranges from 6 GB to 50 GB. Most users find 12-20 GB enough. You don't save much by going for a smaller drive, and you pay a lot more for the bigger drives.

**Communication:** Look for a built-in 56K modem with a RJ-45 connector for your phone line. If you spend a lot of time on a network, you will also want a built-in Ethernet port. While IrDA is available on many units, this has not really been a popular option.

**Pointing device:** You can choose between a pointing stick (like IBMs Trackpoint), or a touch pad. Pointers are easier to control but can give you a sore finger especially if used for a long stretch of time.

**Ports:** Most peripheral devices connect to a USB port; make sure you have at least two USB ports. You will also need parallel (for printers), serial, and PS/2 (for keyboard/mice) ports.

**Docking stations:** This is useful if you are using your notebook as a desktop replacement.

| | General | Desktop replacement | Ultraportable |
|---|---|---|---|
| **You need** | A lightweight model but still don't want to sacrifice screen and keyboard size | Something that gives you all the functionality of your existing desktop PC | An ultra light notebook; something with a bit more panache |
| **Look for** | A model that has an extra bay that would hold a CD/DVD-ROM, floppy drive, add-on battery or even a CD-RW drive. These generally will offer a 13/14-inch XGA display and weigh less than 3 kg | Something that weighs about 4 kg and has a 15-inch display (1280x1024 SXGA). Most peripherals are accommodated within the laptop chassis | There are certain tradeoffs such as a somewhat cramped keyboard and a smaller (and maybe lower resolution) display. The connectivity options are usually limited and battery life is |
| **Our pick** | Zenith 21A | Niskibuki 1GHz<br>IBM Thinkpad, A21M | ACI Profile III<br>Compaq Presario 17XL361 |
| **Price range** | Up to 1,20,000 | Up to Rs 2,00,000 | Up to Rs 1,50,000 |

## Also Remember...

- Laptop upgrade cost a bomb, so make sure that you go for a system that will satisfy your needs (without upgrades) for the next couple of years at least.
- While all mobile processors have some kind of built-in power management technology and several power saving options, battery life is always a concern (especially due to the display).
- An additional battery pack, a video-out port, an external volume control and a graphical battery life indicator are all very useful.
- If you go for a top-end system, you should be prepared to pay a heavy premium. A better choice would be to try and anticipate your requirements in the foreseeable future and look for a match for them.
- Most notebooks come with a one-year warranty on parts and labour, though options for two- or three-year warranties are available at an extra cost. Make sure a service centre that stocks spares is easily accessible to you.



◆ Personal Computers (Desktop) ◆

# PC Mania

A desktop PC is an amalgamation of several components described in other sections of this guide. This makes deciding which PC to buy a considerably more complicated task. Whether you are interested in buying a system being offered by a prominent brand or want to pick each and every component and have it put together with your local assembler, you need to know what exactly to look for.

Anyone buying a PC today is pretty spoilt for choice. You have a wide range of pretty powerful systems available in the market today. And the cost isn't too steep either. With recent price reductions you can now get a high-performance Pentium 4 or Athlon-based PC for less than Rs 45,000.

## Also Remember...

■ When deciding on a configuration for your PC don't just go ahead and start picking the components. It makes sense to start with a list of what you want to use the PC for and the amount of money that you are willing to spend.

■ While most people seem to just want an Intel processor inside, you should have a look at AMD's Duron and Athlon procesors which deserve serious consideration.

■ Microsoft's Windows XP is due for launch in the near future and will require systems with higher hardware configurations than the current generation of operating systems. Make sure you keep this in mind if you are buying a PC today.

■ Most new motherboards come with sound integrated into them. However, if you are considering buying a quality set of speakers then it is worth spending the extra money on a good four-channel PCI sound card.

**SMART TIPS**

**Monitor**: Refer to the guide to CRT monitors on page 96.

**Keyboard and mouse**: Refer to the keyboard guide on page 107 and the pointing devices guide on page 117.



**Storage:** Refer to the hard disk drive guide on page 105 and external storage devices guide on page (XX)

**Floppy and DVD/CD-ROM drives**: Refer to the DVD/CD-ROM guide on page 100.

**Processor:** Refer to the processor guide on page 118.

**Motherboard:** Refer to the motherboard guide on page 110.

**Memory:** Check for the type of RAM supported by your motherboard. PC133 SDRAM is the best choice for new PCs. However, Pentium 4 systems require either the more expensive RDRAM, or in some cases DDR SDRAM.

**Sound:** Refer to the speakers guide on page 121.

**Cabinet:** Refer to Agent 001's report on buying cabinets on page 153.

**Operating system:** Today, for most people the choice is between Windows Me/98 and Windows 2000 that costs considerably more.

| | Budget PC | Midrange PC | Performance |
|---|---|---|---|
| **You need** | A low-cost PC for occasional gaming, small-time office usage, Internet surfing, and perhaps a few processor-intensive applications | A PC for running applications that are fairly graphics and processor intensive such as entertainment and gaming and are ready to shell out a little extra for the added performance | A PC with the best possible combination of performance and features and are willing to pay the premium this requires |
| **Look for** | A Celeron/Duron-class processor rated at 600 to 900 MHz with a standard 5400-rpm 20-GB hard disk and integrated sound and multimedia | A better motherboard (815 chipset instead of 810) with onboard TNT2 or Savage Pro graphics card. Storage would generally be a 20-40 GB hard disk | At least a Pentium 4 1.4 GHz and above or AMD Athlon 1.2 GHz with 256 MB of RAM, 7200-rpm 40-GB hard drive with a GeForce-class graphics card |
| **Our pick** | Nebula Qmax Triad | VisuaLan Lavish P4, VisuaLan Lavish PIII | Dell Dimension 8100, Amdell Monster PC1400 |
| **Price range** | Up to Rs 35,000 | Rs 35,000 to 50,000 | Rs 50,000 and above |



Personal Digital Assistants

# Handheld Harmony

Handheld PCs are moving towards becoming a commodity, just like mobile phones. In the past few months, a bagful of handhelds have been introduced in India, ranging from the cheap and efficient Psion and Palm m100 models to the powerful and feature-rich Pocket PC devices such as the Cassiopeia and the Compaq iPaq. However, all PDAs aren't made equal. Each represents a different mix of memory, speed, software, display, input devices, expansion slots and packaging and size, which makes some more suitable than others for a certain kind of work.

As of now, Palm OS is the market leader with good manufacturer and developer support, but Pocket PC is fast gaining popularity too.

## Also Remember...

- Opt for USB ports if you want to transfer large amounts of data between your handheld and your PC.
- From wireless modems to a digital music player, you can just add the accessory and get a new functionality added. Handspring's springboard connector, Palm's Expansion Card Slot, and the iPaq's Expansion Sleeves are ways to upgrade your handheld to add functionality. However, the expansion modules are generally very costly.
- Audio playback/recording offers low audio quality and is really useful only as a dictation tool.
- Customisable shortcut keys offer you quick access to certain features. Make sure they are sturdy and comfortable.
- Look for a memory expansion slot. The ability to upgrade the memory can increase the lifespan of your handheld. Openly accepted mobile memory standards like MMC and Compact Flash media are preferable to proprietary memory expansion sleeves offered by the iPaq
- Look for a PDA that fulfils your current needs, and provides just enough expandability to last you for a year or two.
- Upgradability is limited. You can't replace the processor or add more than certain types of peripheral devices.



### SMART TIPS

**Operating System:** The main choice is between the Palm OS and Windows PocketPC. Each has its own strengths, Palm OS is simple and fast, Windows Pocket PC is slick. Other less popular options are Symbian EPOC and Agenda Computing's VR3 Linux.

**RAM:** A common RAM (either Static or Flash) is used for storage as well as to run applications. While 8 MB RAM is sufficient for Palm models, it would leave a Pocket PC device gasping for breath.

**CPU:** Palm devices use either 16 or 33 MHz DragonBall processors from Motorola. For the Pocket PC, there are three popular CPU platforms, each with its own data structures and application types. An application written for one CPU isn't necessarily compatible for another, unless re-compiled. The choices are between the Hitachi SH3, Motorola's MIPS processors and the most powerful Intel Strong ARM, which looks like becoming the default choice down the line.

**ROM:** The ROM stores the OS that runs on your handheld, and there is no separate BIOS/Boot loader in handhelds. Only some devices will allow you to upgrade the information on the ROM.

**Display/Touch screen:** Go for a backlit display for greater convenience. Also check whether the screen is coated with a scratch-resistant skin. Colour is cool, if you can afford it.

**Interface/Input devices:** Most PDAs come with a touch screen and a Stylus for navigation and text input. Palm uses its proprietary Graffiti handwriting system that makes you learn the way a specific character needs to be written. You get used to it with a few hours of experimentation. By default, PocketPC comes with a Graffiti-like handwriting recognition system, but a better option is a program called Transcriber which is available for free from Microsoft's Web site.

**Batteries:** Some of the low-end handhelds use regular off-the-shelf alkaline batteries. Having replaceable batteries allows you to switch batteries whenever you are running low. If your handheld comes with rechargeable batteries, it should offer at-least a day of usage time in regular conditions. Lithium ion / Lithium polymer have the best battery life and the ability to recharge at any point in time.

| | Productivity only | Productivity + fun + flaunt value |
|---|---|---|
| **You need** | Basic productivity applications like address book, offline e-mail, expense tracking, scheduling and calendar, notes, etc at the lowest price possible | Productivity features and audio/video playback, as well as support for handheld gaming. It has to be slim, sleek and shiny |
| **Look for** | Long battery life, handy text input, basic synchronisation features, audible alarms and a simple backlit monochrome display | A high-powered processor and more RAM, a colour screen, audio output/input, expandable memory |
| **Our pick** | Palm m105, pSion Revo | Compaq iPaq, Cassiopeia EM500, Sony CLIE |
| **Price range** | Rs 10,000 to Rs 15,000 | Rs 20,000 to Rs 30,000 |



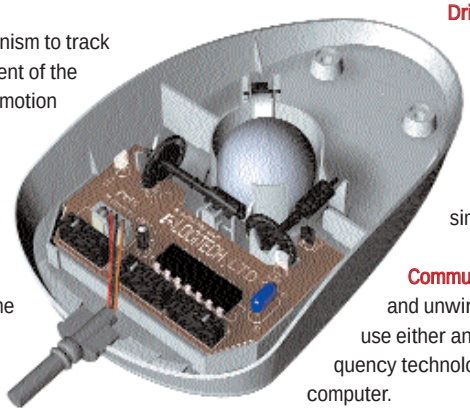
# Nice Mice

In today's GUI-dominated computing environment, a pointing device is a critical component of every system. The most popular pointing device by far is the ubiquitous mouse, followed by trackballs, touch pads, stylus pens, etc. Mice and trackballs constitute the majority of pointing devices sold. For trackballs, the main difference is in the usage—here, the pointing device is stationary while the users move the large ball mounted on the device.

The biggest players originate from Taiwan and China and their success is based upon low prices. The price range for mice starts at about Rs 300 and goes up to Rs 3,000 for higher-end models from Logitech and Microsoft. While the principle of operation of these devices is similar, the functionality (number of buttons, control surfaces and accuracy) is what determines the eventual cost.

## TECHNOLOGY INSIGHT

Most mice use a roller-ball mechanism to track the horizontal and vertical movement of the mouse. Some mice use an optical motion tracking mechanism that uses a beam of light reflected off the mouse surface instead of the ball.



## SMART TIPS

**Buttons:** All mice today have at least two buttons, while some come with either a third button or with a 'wheel' which is very useful for scrolling through documents or Web pages.

**Resolution:** This measures how precisely your pointing device will move in response to a movement and is measured in dots per inch (dpi). Average mice have dpi ratings of about 400 dpi while precision mice have dpi ratings all the way up to 4000 dpi.

**Drivers:** Some of the better mice or trackballs come with special functionality built into their drivers. You get special features like zooming and scrolling, which can make life a lot simpler.

**Communication:** There are wired and unwired mice. The unwired mice use either an infrared sensor or radio frequency technology to communicate with the computer.

**Interface:** There are three interfaces available: serial port, PS/2 and USB port. Check that you have the right ports on your computer before buying a pointing device. Preferably, opt for a PS/2 or a USB device as these are easy to configure and support higher sampling frequencies.

| | Basic functionality | Precision work | Specialised (gaming, professional imaging) |
|---|---|---|---|
| **You need** | A simple mouse for day-to-day work with no special stress on precision | A precision pointing device that is smooth and has decent features | Good response times, precision and smoothness of movement |
| **Look for** | A PS/2 or a serial mouse that features at least two buttons | A PS/2 or USB mouse with three buttons and the ability for scrolling within applications | A high dpi rating, perhaps an optical mouse. Go in for a PS/2 or a USB mouse or trackball |
| **Our pick** | Logitech First Mouse | Logitech Universal Scroll Mouse, Microsoft Mouse | Microsoft Intellimouse Eye, Razor Boomslang |
| **Price range** | Rs 350 to Rs 500 | Rs 500 to Rs 1,000 | Rs 2,500 upwards |

## Also Remember...

- Sampling frequency is a specification that decides the frequency with which the mouse is 'polled' for activity—the more often it is polled, the greater is the effective smoothness of the mouse. While most mice operate on a sampling frequency of 40 Hz, smooth mice would have a sampling frequency of 100 Hz.
- Be sure to try out the device before buying it as there are some devices that are made only for right-handed users. A left-handed user would find it very uncomfortable when used for extended periods.

Zero1 Awards The Best Products of the Year December 2001 the digit mark of excellence

# Speed of Thought

Cost and performance are the parameters that determine whether a processor fits into the 'budget' solution category or is an out and out 'performance' solution. AMD, the first to break the 1 GHz clock-speed barrier, has recently stolen a march over Intel as far as pure performance goes. This holds true for both the budget and performance categories, where the Duron and the Athlon outperform their equivalent and in some cases even higher-speed Intel counterparts.

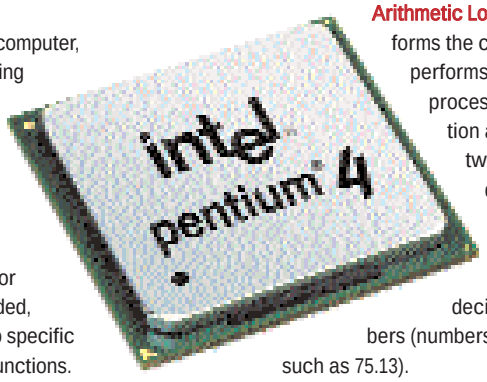
The prices of mainstream 32-bit processors have fallen substantially and you can now buy an Athlon 1.4 GHz processor for about Rs 9,500 giving you performance equivalent of a Pentium 4 1.8 GHz which retails at around Rs 12,500.

## Also Remember...

- If you are on a very tight budget and only need basic office productivity, you should go for the low-cost Cyrix MIII processor from VIA. This works with any Socket 370 motherboard.
- If you play a lot of games you need to look for a processor that supports special instruction sets like 3DNow! (Athlon) or SSE (Pentium III/4).
- For high-end 3D design and CAD applications, you will require a processor with the highest clock speed you can afford and the largest amount of cache on board. This would make the Pentium and Athlon processors your best choice.

### TECHNOLOGY INSIGHT

Everything that goes on inside a computer, from copying a simple file to playing an advanced computer game, is composed of a stream of binary data. The processor is a digital device that receives information from software, processes it in a predetermined fashion and returns the results. For this reason, the processor is divided, physically and electronically, into specific regions that perform dedicated functions.




A specific fabrication process is used to etch the die of a processor onto a silicon wafer. With the P-III processors, a 0.18 micron process is used. This will soon move to a 0.13 micron process which will allow 57 million transistors on a P4 processor.

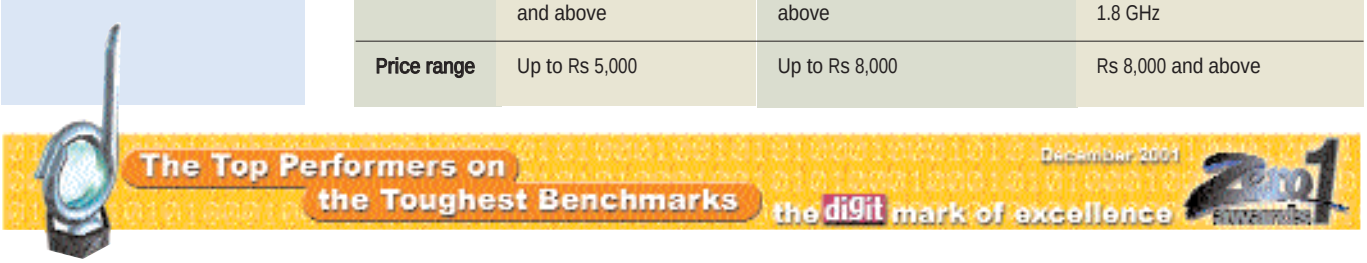
**Cache:** There are two types of cache—data cache and instruction cache. After information is received by the processor, it is sent to a small temporary storage region (known as Level 1 cache) 64 bits at a time. Most modern processors have 256 K of Level 2 cache at the core frequency of the processor itself, thus providing a fast data path.

**Arithmetic Logic Unit (ALU):** This unit forms the core of the processor and performs the actual mathematical processing on the data like addition and subtraction. There are two ALUs, each of which handles two distinct types of numeric data types: integers (whole numbers that do not include a decimal) or floating-point numbers (numbers that involve decimals, such as 75.13).

**Branch Prediction Unit:** This is a very special part of the processor that inspects the nature of the instructions in the instruction cache and decides which of the ALUs is best suited for processing the data fastest. This branching of the data is done to ensure that no ALU is idle while the other is processing an instruction. This streamlines the decoding process and increases the efficiency of the processor.

**Floating Point Unit (FPU):** The Floating Point Unit is responsible for handling any mathematical operations involving decimal number.

| | General desktop use | Home entertainment | Gaming and graphics professionals |
|---|---|---|---|
| **You need** | Decent performance in office productivity applications | Lag-free performance in all graphic, multimedia, video oriented applications | Movies, music, gaming and complete home entertainment with oodles of processing power |
| **Look for** | Any Celeron/Duron class processor with speeds in excess of 700 MHz | A Pentium III/Duron processor with speeds in excess of 900 MHz | An Athlon/Pentium 4 class processor with speeds in excess of 1.2 GHz |
| **Our pick** | Duron 800, Celeron 733 and above | Pentium III 1 GHz, Duron 900 and above | Athlon 1.4 GHz, Pentium 4 1.8 GHz |
| **Price range** | Up to Rs 5,000 | Up to Rs 8,000 | Rs 8,000 and above |



# A Quick Scan

The scanner, which used to be a luxury not so long ago, is now well within the reach of most people. Prices have fallen partly due to competition between the numerous manufacturers and also due to the advancement of the technology used. This has put it high on the shopping lists for many home users, who basically use them to have fun, explore and maybe even compile their photo albums online. Today scanners begin at just about Rs 4,000 and offer pretty acceptable performance in terms of quality and speed. The presence of USB connectors on almost all new motherboards has helped ease the pain of installing the scanner at the same time as increasing scanning speed due to the higher data transfer rates it supports.

## Also Remember...

- Upgrading your RAM is probably a good idea if you are going to be scanning high-resolution images. This will have a significant impact on overall scanning performance.
- Check for sRGB support. This is a new standard that will make Web images look even better.
- Consider buying a transparency adapter if your usage is high enough. Automatic document feeders (ADFs) are a boon to people with large text scanning needs.
- To get good results with 35-mm slides or negatives, you should look for a special scanner that has been designed for them.
- Check that your printer is good enough to reproduce the high quality scans that the scanner produces.

### TECHNOLOGY INSIGHT

The main components in the scanner consist of a light sensitive diode, a light source, lens, the stepper motor, which moves the scan head and the mirror on which the document is placed. The light hits the document and the image is reflected back to the diodes via mirrors. The image is then focused on the CCD array, which converts the photon in to electron.



**Platform size:** For most home users, A4 size scanners are sufficient. However, for professional uses a scanner with an A3 sized platform is preferable.

**Colour depth:** Though 36-bit is preferable, you should go for a minimum of 24-bit colour depth.

### SMART TIPS

**The light source:** This is either a cold cathode fluorescent lamp (CCFL) or Xenon lamp. Xenon lamps give you better performance.

**Resolution:** The higher the resolution of the scanner, the sharper will be the image reproduced. Most low and mid-range scanners today have an optical (or hardware) resolution of 600x1200 pixels. Here the 600 refers to the number of CCDs or CIS (Contact Image Sensors) that are arranged in a horizontal row and 1200 infers that the stepper motor is capable of moving in steps of 1/1200th of an inch.

**Connectors:** If you have a free USB port in your system then a USB scanner is the recommended choice. Parallel port scanners have lower data transfer rates than the USB models, whereas the SCSI models, which require a special adapter, give you the best performance.

**OCR software:** Most bundled OCR software offer basic functionality. For heavy text-based scanning you should look at third-party OCR packages such as ABBY FineReader 5.0.

| | Basic use | Intermediate use | Professional use |
|---|---|---|---|
| **You need** | Something that you will use occasionally use to scan home photos or something from a book or magazine | Something for more serious scanning, either for text documents or images | A scanner with high resolution and speeds because of large volumes of scanning (say, publishing, legal, graphics) |
| **Look for** | Any A4 scanner with USB support and a minimum resolution of 600x1200 dpi | Any A4 scanner with USB support and a minimum resolution of 1200x2400 dpi or better | A scanner with 1600x3200 dpi or better resolution, A3 platform size and preferably a SCSI interface |
| **Our pick** | Acer ScanPrisa 640U, UMAX Astra 2000p | HP ScanJet 5300C | Epson 1640SU |
| **Price range** | Rs 4,000 to Rs 10,000 | Rs 10,000 to Rs 18,000 | Above Rs 18,000 |

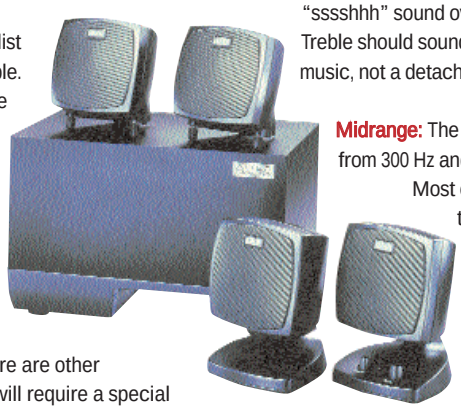


# Sound Decisions

PC speakers have come a long way from being just one part of a 'multimedia kit'. They have graduated to full-blown kits of their own with support for Dolby Digital 5.1. Also, with a lot of integrated soundcard solutions now available, people have started spending more money on speakers. There is now a perceptible difference in the quality and the choices available, with more than 10 different manufacturers competing in each price segment. Also, a lot of users now prefer buying 2.1 or higher speaker setups because of the better sound quality.

**SMART TIPS**

**Power output:** Most manufacturers list the PMPO output, but this is unreliable. Try and find out the RMS rating of the speakers instead. For general use, even about 4W RMS per channel would be sufficient.



**Multi-speaker sets:** These use a separate unit to reproduce the lower frequency band (20 to 300 Hz). This means that you will have two satellites and a subwoofer. There are other 4.1 and higher speaker sets which will require a special soundcard.

**Bass reflex:** This is a speaker with a hole or slot in the cabinet that allows sound inside the cabinet to emerge into the listening room. Bass reflex speakers have deeper bass extension than speakers with sealed cabinets.

**Treble:** Treble sounds range from frequencies of 2,500 Hz to 20,000 Hz. Too much of upper treble, say about 10,000 Hz, would give that "ssssss" sound instead of the "sssshhh" sound over the main cymbal sound. Treble should sound like an integral part of the music, not a detached noise riding on top of it.

**Midrange:** The Midrange starts roughly from 300 Hz and may stretch up to 2000 Hz. Most of the musical energy is in the midrange, particularly the important lower harmonics of most instruments. This region contains most of the musical energy. The sound of human voice, rustling of leaves and the sounds of other animals is also concentrated in this band.

**Bass:** Deep bass would probably be at 16 Hz—the lower the frequency, deeper the bass performance. The popular belief is that more the bass, the better the sound. Correct bass reproduction is essential for a satisfying musical reproduction. Although reproducing the sudden attack of bass is vital, equally important is the system's ability to reproduce a fast decay, i.e. how a note ends.

| | General desktop use | Home entertainment | Gaming and graphics professionals |
|---|---|---|---|
| **You need** | A speaker for listening to music occasionally. Audio quality is not a big issue as long as it "sounds ok" | A decently powered speaker set. You listen to music all the time and enjoy gaming to a certain extent | Movies, music, gaming. Complete home entertainment is what you want with loads of power |
| **Look for** | Any amplified two-speaker set with bass/treble/tone controls on the fascia of the set | A speaker set with a subwoofer and a combined RMS rating of at least 15 watts and higher. Also look out for a good 4.1 set if it fits in your budget | Minimum 4.1/5.1, Dolby Digital decoder with a combined RMS of over 30 watts |
| **Our pick** | Mercury SW480<br>Microtek Xplore Josh VX 820 | Creative PC Works 2.1<br>Jetway Artis<br>Creative FPS 1000 | Logitech Xtrusio DSR 100<br>Creative Cambridge DTT2500 |
| **Price range** | Up to Rs 1,000 | From Rs 1,000 to Rs 8,000 | Rs 8,000 and above |

## Also Remember...

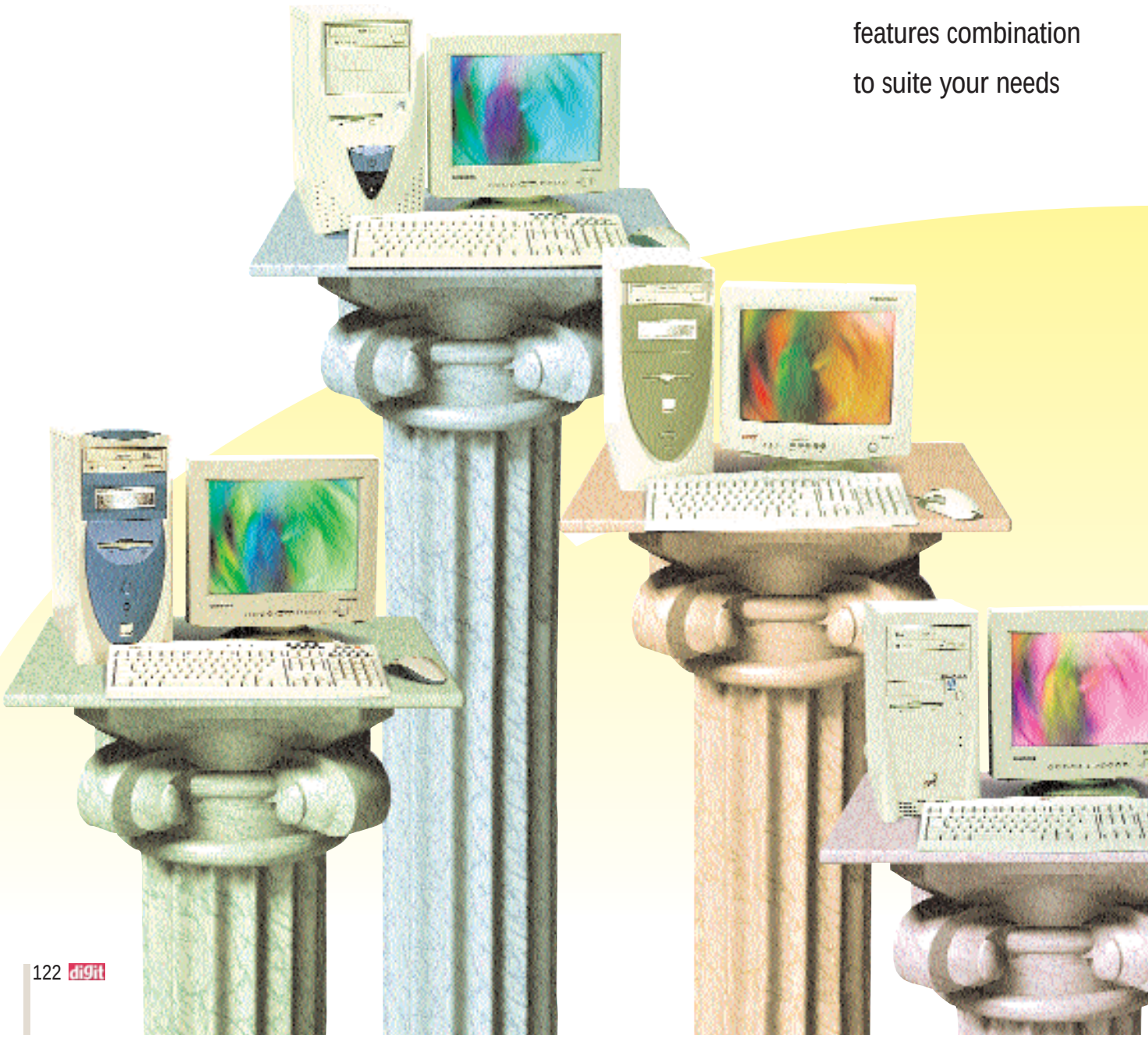
- The build quality should be sturdy enough to sustain vibrations and should not resonate.
- Tone, treble, base and volume controls should be easily accessible, preferably on the front fascia of the system.
- The placement of the speakers is key for quality sound reproduction.
  a) Toe-in or angle-in the speakers so that they form a triangle with the listener.
  b) The speakers should be placed at the same height as the listener's ears.
  c) The subwoofer should be placed in a corner of the room.



IN TEST:

# INSIDE THE

Branded PCs lined up in a shootout that will tell you the optimal price-performance-features combination to suite your needs



# 33 BRANDED PCs

# BEIGE BOX

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**Mid-range PCs**
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**Photograph:** Mexy Xavier, **Imaqging:** Neeta Wadiker

ASHU MEHROTRA

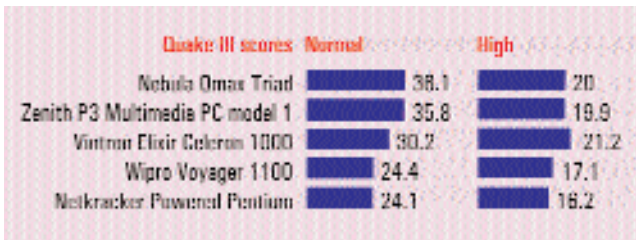
Whether you're looking for a PC that can match the sweater you're wearing right now or one that comes backed by a three-year warranty, the choices available in the market today are numerous. Those days when only large companies or people with relatives abroad bought branded PCs are long gone. We now have a plethora of options in terms of computer manufacturers who have a nationwide presence and offer everything from comprehensive warranties, sales and service outlets, plenty of bundled (and licensed!) software, and innovative designs. More importantly, branded machines offer users the assurance of quality and service, no matter where they are or where they buy the PC from.

In this shootout, we've brought together the biggest computer manufacturers in the country and evaluated them on a number of grounds. The branded PC experience consists of a lot more than just pure performance. The fact that they bundle a licensed operating system and other software, offer after sales services with comprehensive warranties and have a national presence make the branded PC worth that extra 10-20 per cent in terms of price, as against your standard assembled white box.

**For a few rupees less**

Looking for a PC with a set of components that will allow you to get your primary applications accomplished, and which also includes features such as multimedia along with communication and networking, and you have only a limited budget?

Well, with prices of components having come down by almost 30-40 per cent over the last year, it's possible to get a machine with reasonable features for less than Rs 35,000. For instance, a CD-ROM drive is available for as low as Rs 2,000 and is a standard peripheral in most machines. Even the lowest priced PC that we received




The top five scorers in *Quake III* among the Budget systems

Find it on digit interactive

**More Info** on the test process and the products tested. Check out **Mindware**

## TEST PROCESS

For a PC to qualify for this comparison test, it had to have a licensed operating software and applications, warranties, offer a specific configuration with a particular model, and have nationwide service and support.

Based on price, we classified the computers as sub-Rs 35,000 (for budget systems), Rs 35,001 to Rs 50,000 (for mid-range systems) and Rs 50,001 and above (for performance systems). These price categorisations also correspond to the needs of different kinds of users. For instance, a budget PC would be preferred by price-conscious users who would like to have a set of components allowing them to get their primary applications accomplished for as low a price as possible. The mid-range systems would appeal to a second set of users who are looking for a combination of performance and price. Since these users are more technology oriented and the major applications are both graphics and processor intensive, vendors provide a combination of these two to give the best results possible within this price range. The third price category (performance systems) reflects the needs of users who are purely interested in performance and features, and sometimes, simply the brand. Cost is not a criterion for them. In their own words, "Give me the best!" would sound pretty apt.

What's most important in a branded system is the overall package that you get. maximum weightage (50 per cent) was given to system configuration and the overall package. We looked at parameters such as licensed operating system and applications, system configuration, shipping and packaging, manuals/brochures and system restore CDs, and countrywide sales and support.

We evaluated the performance of these systems on various parameters, using two classifications of tests: Real-world and synthetic benchmarks. More weightage was accorded to the real-world tests as compared to the synthetic benchmarks.

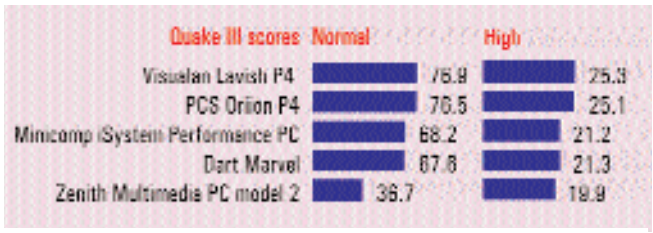
Among the real-world tests, we ran Photoshop 6.0 to test a computer's processor, RAM and hard disk. We also used AudioActive v1.55 for encoding a sample WAV file to an MP3. This test is a very good indication of the real-world power of the processor as audio encoding is highly processor-dependant. To evaluate the graphics performance of the computer, we ran the *Evolva* Demo and *Quake III Arena*.

Among the synthetic benchmarks were Ziff-Davis Content Creation 2000, a test that uses office productivity suites and applications to evaluate a computer's performance; the SiSoft Sandra 2001te, which is an application that runs low-level tests on the various sub-systems of the computer such as the hard disk, processor and RAM; the 3DMark 2001, which is a gaming benchmark that evaluates the performance of the graphics card.

for test had a CD-ROM drive. Also, with integration of critical and sometimes expensive components such as sound and graphics cards as seen in the Intel 810 and 815-based motherboards, costs can be significantly lowered.

So if you need a low-cost PC for occasional gaming, small-time office usage, Internet surfing, and perhaps a few PC-intensive applications such as Adobe Photoshop, Corel Draw, 3D Max, etc, but would not need to work simultaneously with multiple applications (which means less stress on the processor), a PC with a Celeron/Duron-class processor with a clock speed ranging from 600 to 900 MHz with a standard 5,400-rpm 20-GB hard disk and integrated sound and multimedia should be suitable for your requirements.

In this category, a PC more for entertainment rather than work would be one like the **Nebula Qmax Triad**. With scores of 36.1 and 20 fps in *Quake III*, it is the highest in this category, but only by a slight margin. However, it will disappoint users looking for a lot of additional software and features as it comes loaded with just an operating system. Another point that went against this system was the average build quality. However, in terms of overall scores, this computer did well. Another PC that gamers can consider is the Zenith PC, which incidentally was the only one in this category to bundle a P-III 1 GHz processor. It came in a close second in *Quake* with 35.8 and 19.9 fps, which means it will run most games in medium to low resolutions.



The top five scorers in *Quake III* among the Midrange systems

On the office productivity front, where users would like a good machine for applications and for others who keep a second PC at home for work, the **Nebula Qmax Triad** once again proved to be the best option available. It scored a fair index of 28.1, which was the highest in this category in the ZDNet Content Creation test too. Coming in a close second is the Netkracker P-III 933 MHz processor powered machine that posted a score of 27.9 in the Content Creation benchmark. Another factor that went in favour of this PC was that it had 128 MB of PC 133 MHz RAM allowing for greater leeway with memory-intensive applications. The difference was clearly visible as

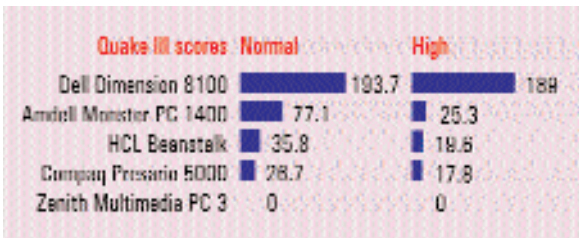

Dart Emerald: very fast in encoding audio

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Hoz Ad

this PC was able to finish the test in an excellent timing of 177 seconds. But with Intel 810 chipset, any user interested in graphics should opt out, as this chipset board does not provide an AGP slot, which would be a problem if you want to upgrade later.

For users who need PCs for data-intensive applications such as word processing, spreadsheet or any database application, the **Vintron Elixir 1000** is one of the best machines available in the Budget category. Carrying a 7200-rpm drive, it delivered excellent scores in SiSoft's drive benchmarking with 34 MBps and 37 MBps in sequential write and read, respectively. This makes it quite suitable for users who need the PC for applications that frequently use the hard disk subsystem. The next best machine for these users is undoubtedly the Wipro Voyager 1100, which gave decent scores of 30 MBps and 32 MBps in sequential read and write, respectively.

There were other PCs also that boasted of good configurations, but due to a mismatch or inherent limitations in some of the components, they lost out in the overall performance. To begin with, the Amdell Value 600 PC was the only one in this category with an AMD Duron processor, which is almost as good as a P-III processor of equivalent speed. Although this PC had used a Seagate Barracuda ATA/100 drive, the speed of its hard disk subsystem was bottlenecked due to the SiS 730 motherboard that is known for poor bandwidth transfer rates on an IDE controller. It gave very poor scores of 14 and 15 MBps in sequential read and write, respectively. Similarly, the graphics used were integrated onto the SiS 730 chipset and returned very low scores of 24.1 fps and 6 fps in the normal and high quality modes of *Quake III*, respectively.




The top five scorers in *Quake III* (Performance systems)

One pertinent observation here is that the majority of the PCs in the sub-Rs 35,000 category had just 64 MB of RAM. This is peculiar, considering that the price of RAM is hovering between Rs 800 to Rs 900 for 64 MB, and also the fact that most of the current applications available require 128 MB or more memory to perform well.

Within this price range, if you have a restricted budget, but would need room for future upgradability, then expandability should be a key in deciding which PC to buy. Once again **Nebula Qmax Triad** proved to be a very good choice. It had six PCI slots on the board and also had a very roomy cabinet. On the other hand, the Celeron-based PCS Oriion had good looks and aesthetics but with an i810-based motherboard and a very small cabinet, you could do with a little more room for expansion.

### A little of both

If you need a PC for running applications that are fairly graphics and processor intensive as well as for entertainment and gaming and are ready to shell out a little extra for a combination of performance and features, you can get decent options within a price range of Rs 35,001 to Rs 50,000. This was visible in the PCs we received with combinations of better motherboards (815 chipset instead of 810) with onboard TNT2 or Savage Pro graphics card.

Interestingly, once again this segment was dominated by Intel processor-based PCs. Out of the 17 computers in this category, there were 10 P-III machines, five P4 systems and only two AMD Athlon-based computers. This indicates that a P4 based PC, which had entered the market six to eight months ago with a price tag of



Wipro Voyager Flex: wrong selection of motherboard for the processor

## Tweaks for your Brand New Machine

When your brand new computer is delivered to you, it is in its most pristine condition and your applications load blazingly fast and run really smooth. However, as you use your computer, it tends to become progressively slower and applications do not run as smoothly or as responsively as they used to.

To counter this, there are a number of little tasks and housekeeping settings that you can run on your computer to ensure that it remains running as smoothly as when you first booted it. Also, there are a plethora of settings that you can run on your computer to push it a little extra and utilise all the power that is hidden inside, making it a faster machine than it ever was before.

**Restrict your startup files**

Go to the Startup folder in Windows and remove any applications that are unnecessary during startup. This includes download managers, the Office Start bar, Chat clients, etc. These applications take up precious resources like memory and processing power which are invoked when you start your PC. Therefore, launch them only when you need them and you'll be freeing your computer's processing power for applications that actually need it.

**Enable DMA**

This is a setting that enables your IDE devices (like the hard disk and the CD/DVD drive) to operate in a special mode that does not involve your computer's main processor when reading or writing to these devices. DMA (Direct Memory Access) is a mode of data transfer where the IDE device itself coordinates the flow of data between the hard disk and the system. Therefore, your computer's main processor is left to perform more important tasks. This particular tweak results in very big speed increases.

**Load the latest drivers**

Your new computer will most probably come with a pre-installed operating system or at least with the setup CDs that contain the drivers for the various hardware in your system. You are likely to have outdated drivers on your system and while your system would be working correctly, it would not be operating to its fullest potential. Remember to load the latest drivers for your hardware, especially the video card, motherboard chipset and soundcard.

Rs 80,000, is now within the reach of the majority of buyers.

Storage in these PCs generally consisted of a 20 GB hard disk while the Acer SX series was the only one to feature a 10 GB drive, which is pathetic by today's standards. Regarding optical storage, 13 out of 17 PCs had a CD-ROM drive while four featured a DVD drive. Interestingly, here the Dart Emerald included the fastest drive available in India, the 16x DVD drive.

The **VisuaLan Lavish P4** was the overall winner in this category; considering the overall choice of components and pricing, it is definitely one that takes the top honours. Users looking for hard disk-intensive applications such as databases and professional image editing will find this PC a worthy choice as it delivered very good results in SiSoft Sandra Drive benchmark with a score of 38 MBps and 36 MBps in sequential read and write tests, respectively. It also had the lowest average access time along with its sibling, the VisuaLan Lavish PIII. For users looking for playable gaming, in spite of featuring a Riva TNT2 graphics card, this system delivered scores of 76.9 fps and 25.3 fps, respectively, in normal and high resolution in *Quake III*—very good for the casual gamer who is not looking to push the graphical limits of his system. Coming in a close second was the PCS Oriion. This P4-based system used a TNT2 M64 graphics card and generated 76.5 and 25.1 fps in normal and high settings,

## Upgradability and Branded PCs

There was a time when buying a branded PC meant that your upgrade options were very cumbersome, both in terms of availability and cost. To a very large extent, this has been quelled since most of the systems use off-the-shelf components and conform to standards. Therefore, components like the processor, memory, storage and video sub-system can be easily upgraded. However, there are a few systems, especially those that sport unconventionally designed cabinets, where components like the motherboard conform to slightly different standards in terms of the form factor. You would have to approach the company for getting replacements or upgrades.

Watch out for this when upgrading your branded PC:

- Find out the exact specifications of the hardware you are looking to upgrade and ascertain whether the new hardware is compatible with the interface in your system.
- If you are confident of upgrading your branded computer yourself, make sure that you only buy and use the hardware that is compatible with your system. Otherwise, get in touch with the store from where you purchased it and get it done professionally.
- Also remember that any attempt at upgrading your branded PC by yourself would void any warranty that you have with the computer company. Attempt an upgrade yourself only if you are willing to forfeit this warranty and are conversant with your computer's hardware configuration.
- Do not try and forcibly connect an upgrade to your system as this may damage your computer.

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Hoz Ad

## The iMac: Worth a Bite

This iMac's been around for three years and nobody has been able to re-create the magic Apple did to computer design. But even the best isn't always the most complete. The iMac looked beautiful, offered a decent performance, included loads of built-in goodies, but still lacked a few basic things such as the ability to transfer files to your friend's non-networked PC without adding any extra components such as an external CD Writer or zip disk, and not to forget the beautiful but irritating round mouse. The new iMac fixes all this.

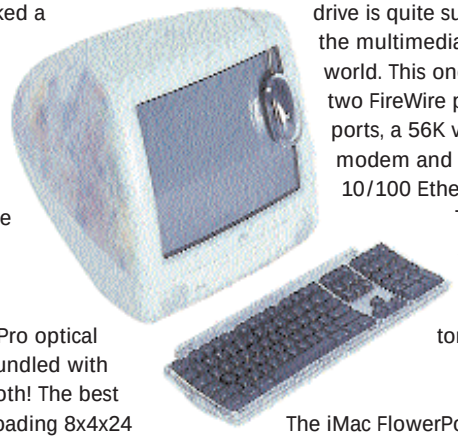
It comes with the Apple Pro optical mouse, similar to the one bundled with the new G4 machines. Smooth! The best addition is the built-in slot loading 8x4x24 CD-RW drive. Just pop in a rewritable CD, dump a few files, and walk to the horizon happily—no hassles with a non-existent floppy drive, no extra money to be spent in order to add another storage device.

Even the enormous 40 GB hard drive is quite sufficient for the multimedia-rich Mac world. This one includes two FireWire ports, two USB ports, a 56K v.90 fax modem and a RJ45 10/100 Ethernet port.

The built-in ATi RAGE 128 Ultra graphics accelerator with 16 MB of SDRAM is capable of pumping out a maximum usable resolution of 1024x768 at 75 Hz on the built-in 15-inch monitor. On the base, you would see two tiny but crisp and powerful Harman Kardon speakers, quiet similar to the two that came with the now discontinued PowerMac G4 Cube.

The model we received came with a 600 MHz PowerPC G3 processor with 128 MB of RAM expandable to 1 GB of RAM. It came pre-bundled with Mac OS 9.1, and OS-X, where OS 9.1 is preinstalled. Loads of other goodies such as iMovie 2, iTunes, AppleWorks and quite a few games and utilities also came bundled along with this.

Overall, a sturdy, all-in-one, useable Mac that comes to Indian homes at around twice the price it sells for in the US.



The iMac FlowerPower

respectively, making it a worthy choice for the casual gamer.

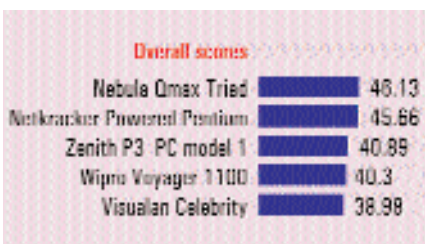
For users who are interested in good quality sound, the Minicomp iSystem is the ideal PC featuring a Lancer 4 point surround soundcard and a DVD-ROM drive. This makes it quite suitable for home entertainment. Another machine worthy of consideration by MP3 fans is the Amdell Powerhouse 1000, featuring the Athlon 1 GHz, which completed audio ripping in 35 seconds flat, followed closely by Visualan Lavish P4 which took 36 seconds. If you encode a lot of MP3s, these systems are pretty good choices.

For users whose primary job on a PC includes data-intensive applications, the **Amdell Workhorse 850** took the cake with the highest sequential write speed of 39 MBps. Another point in its favour is its price at Rs 37,500. Other PCs for these users are both the machines of Visualan with scores of 38 MBps and the Vintron Biz 123 1000 with a score of 37 MBps.

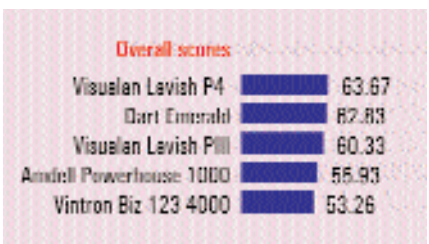


The Compaq Presario 5000 comes with JBL Platinum speakers and a Web cam

Users looking at a PC for office productivity and performance will be satisfied with the **Visualan Lavish P4** with a score of 35.2 in Content Creation Winstone 2000. Visualan Lavish PIII once again trailed it closely with a score of 34.4.




The top five scorers in the Content Creation test among the Budget systems




The top five scorers in the Content Creation test among the Midrange systems

Dart Emerald, Dart Marvel and Amdell Workhorse 850 delivered a reasonable performance in the ZD Content Creation test with scores of 33.1, 32.7 and 30.6 respectively. These PCs offer a good price-performance combination.

Any PC with an Intel 815 chipset-based motherboard, 64 MB RAM and a Pentium III 700 and above processor would generate a score in the range of 25 to 30 in Content Creation. This score can be referred to as an above average score. For the same configuration, if a machine generates a score below the average, then it is definitely not worth the investment, especially if you plan to use it for office applications.

A majority of the PCs in this category shipped with 15-inch monitors. For those interested more in graphics-oriented applications, a 17-inch monitor would definitely make a world of a difference. For these users, Amdell Powerhouse 1000, Vintron Biz 123 4000 and Visualan Lavish P4 had 17-inch monitors. In fact, Zenith Multimedia PC model 1 and 2 had identical configurations, barring the monitor.

As Internet and electronic communication in the form of e-mail, chat and Internet Telephony has become one of the primary reasons why users buy a PC, all the PCs had fax modems, either internal or external. This helps users get online as soon as they receive a PC.

SCORE BOARD

# Specifications

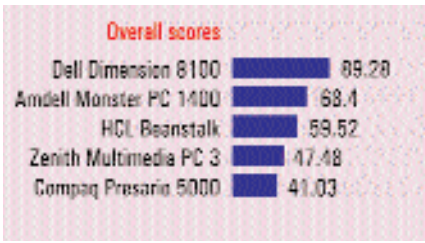
## BRANDED PCS: FEATURES AND KEY PERFORMANCE BENCHMARKS

| | Manufacturer | Model | Contact | Phone | Fax | E-mail | Price (Rs) |
|---|---|---|---|---|---|---|---|
| BUDGET PCS | Intelisys | Amdell Value PC 600 | Intelisys India ltd | 022-8527000/8000 | 022-8519723 | iil@vsnl.com | 33,750 |
| | Dart Computers | Dart Pearl Celeron | Dart computers Pvt Ltd | 07104-32565/32575 | 07104-32570 | rohit@dartcomputers.com | 24,000 |
| | Minicomp Infotech Pvt Ltd | Minicomp iSystem Budget PC | Minicomp Infotech Pvt Ltd | 022-829 1527 | 022- 8292048 | sunita@minicomp-india.com | 23,900 |
| | NetKracker | NetKracker Powered Celeron | Netkracker Ltd | 080-5219660/65 | 080-5219862 | customercare@netkracker.com | 24,995 |
| | NetKracker | NetKracker Powered Pentium | Netkracker Ltd | 080-5219660/65 | 080-5219862 | customercare@netkracker.com | 29,995 |
| | Nebulla | Qmax Triad Series | Nebula Technologies Pvt Ltd | 022-6347158 / 9 | 022-6347156 | sandip@nebulatech.com | 23,760 |
| | PCS | PCS Orion (Celeron 667) | PCS Industries Ltd | 022-8502465/2367 | 022-8520193 | arunnarayan@pcsil.com | 29,995 |
| | Visualan | Celebrity | VisuaLan Technologies | 022-8202688 | 836 8514 | marketing@visualanindia.com | 26,500 |
| | Vintron | Vintron Elixir Celeron 1000 | Vintron Informatics Limited | 011-6810815/16 | 011-6810382 | corporate@vintron.co.in | 27,820 |
| | Wipro | Wipro Voyager 1100 | Kaytek Systems | 022-8329640 | 022-821 5908 | kaytek@wipro.co.in | 34,000 |
| | Zenith Computers | Zenith P3 Multimedia PC model 1 | Zenith Computers | 022-837 7300 | 022-8364859 | mumbai@zenith-india.com | 35,000 |
| MID RANGE PCS | Acer | VERITON 3200 | Acer | 080-5219520 | 080 - 5219535 | ailenquiries@acer.co.in | 50,000 |
| | Acer | Acer Power SX Series | Acer | 080-5219520 | 080 - 5219535 | ailenquiries@acer.co.in | 42,000 |
| | Intelisys | Power House 1000 | Intelisys India ltd | 022-8527000/8000 | 022-8519723 | iil@vsnl.com | 45,500 |
| | Intelisys | Workhorse 850 | Intelisys India ltd | 022-8527000/8000 | 022-8519723 | iil@vsnl.com | 37,500 |
| | Compaq India | Compaq Presario 4000 | AVI Electronics | 022-6465522 | 022-6460347 | aviteam@vsnl.com | 39,990 |
| | Dart Computers | Dart emerald - P4 | Dart Computers Pvt Ltd | 07104-32565/32575 | 07104-32570 | rohit@dartcomputers.com | 50,000 |
| | Dart Computers | Dart Marvel | Dart Computers Pvt Ltd | 07104-32565/32575 | 07104-32570 | rohit@dartcomputers.com | 42,000 |
| | Minicomp Infotech Pvt Ltd | Minicomp iSystem Performance PC | Minicomp Infotech Pvt Ltd | 022-829 1527 | 022- 8292048 | sunita@minicomp-india.com | 47,900 |
| | PCS Industries Ltd | PCS Oriion P4 | PCS Industries Ltd | 022-8502465/2367 | 022-8520193 | arunnarayan@pcsil.com | 49,995 |
| | PCS Industries Ltd | PCS Oriion P4 | PCS Industries Ltd | 022-8502465/2367 | 022-8520193 | arunnarayan@pcsil.com | 39,995 |
| | Vintron | Vintron Elixir Biz 123 4000 | Vintron Informatics Limited | 011-6810815/16 | 011-6813082 | corporate@vintron.co.in | 47,580 |
| | Vintron | Vintron Biz 123 3000 | Vintron Informatics Limited | 011-6810815/16 | 011-6810382 | corporate@vintron.co.in | 36,140 |
| | Visualan | Lavish PIII | Visualan Technologies Pvt Ltd | 022-8202688 | 022-836 8514 | marketing@visualanindia.com | 36,900 |
| | Visualan | Lavish P4 | Visualan Technologies Pvt Ltd | 022-8202688 | 022-836 8514 | marketing@visualanindia.com | 48,900 |
| | Wipro | Voyager 310 | Kaytek Systems | 022-8329640 | 022-821 5908 | kaytek@wipro.co.in | 39,000 |
| | Wipro | Wipro Voyager flex | Kaytek Systems | 022-8329640 | 022-821 5908 | kaytek@wipro.co.in | 45,000 |
| | Zenith Computers | Zenith P3 Multimedia PC model 1 | Zenith Computers | 022-837 7300 | 022-8364859 | mumbai@zenith-india.com | 38,500 |
| PERFORMANCE PCS | Intelisys | Amdell Monster PC 1400 | Intelisys India ltd | 022-8527000/8000 | 022-8519723 | iil@vsnl.com | 68,750 |
| | Compaq India | Compaq Presario 4000 | AVI Electronics | 022-6465522 | 022-6460347 | aviteam@vsnl.com | 59,677 |
| | Dell India | Dell Dimension 8100 | Dell India | 080-5586110 | — | — | 98,134 |
| | HCL Infosystems | Beanstalk Omega | HCL Infosystems | 914-4520977 | 914-555221 | — | 52,990 |
| | Zenith Computers | Zenith P3 Multimedia PC model 3 | Zenith Computers | 022-837 7300 | 022-8364859 | mumbai@zenith-india.com | 57,500 |

| Specifications | Photoshop filters (seconds) | *Quake III* (Normal) (fps) | *Quake III* (High): fps | Audio encoding (seconds) | ZD Content Creation index | Rating |
|---|---|---|---|---|---|---|
| Duron 600 MHz processor, 128 MB PC133 SDRAM, 20 GB ATA/100 hard disk, SiS 730 onboard graphics card, 52x CD-ROM drive, IDE interface, Ace 56K modem, integrated soundcard, 15-inch monitor | 262.03 | 24.1 | 6 | 71 | 23.6 | B- |
| Celeron 800 MHz processor, 64 MB PC133 SDRAM, i810 chipset based motherboard, 20 GB ATA/66 hard disk, integrated graphics card, 56x CD-ROM drive, IDE interface, integrated soundcard, 56K modem, 15-inch Microtek monitor | 234.87 | 22.1 | 14.7 | 66 | 21.9 | B |
| Celeron 700 MHz processor, 64 MB SDRAM, 810 chipset based motherboard, 20 GB ATA/66 hard disk, integrated graphics card, 52x CD-ROM drive, IDE interface, onboard soundcard, 56K modem | 284 | 21 | 14.7 | 77 | 21 | B |
| Celeron 633 MHz processor, 64 MB SDRAM, 810 chipset based motherboard, 20 GB hard disk, 52x CD-ROM drive, IDE interface, onboard soundcard, 15-inch monitor | 318 | 15.8 | 14.6 | 84 | 19.9 | B- |
| Pentium III 866 MHz processor, 128 MB SDRAM, 810 chipset based motherboard, 20 GB hard disk, integrated graphics card, 52x CD-ROM drive, IDE interface, onboard soundcard, 15-inch monitor | 177 | 24.1 | 16.2 | 55 | 27.9 | B |
| Pentium III 933 MHz processor, 64 MB RAM, KOB 815 E FSX chipset based motherboard, 52x CD-ROM drive, IDE interface | 198.5 | 36.1 | 20 | 47 | 28.1 | B |
| Celeron 667 MHz processor, 64 MB SDRAM, i810 chipset based motherboard, 20 GB hard disk, onboard graphics card, 52x CD-ROM drive, IDE interface, onboard soundcard, 56K modem, 15-inch monitor | 273 | 21.3 | 14.7 | 80 | 20.3 | B- |
| Celeron 800 MHz processor, 64 MB PC133 SDRAM, 810 chipset based motherboard, 20 GB ATA/66 hard disk, onboard graphics card, 52x CD-ROM drive, IDE interface, onboard soundcard, 15-inch monitor | 257.57 | 15.5 | Failed | 71 | Failed | B- |
| Celeron 733 MHz processor, 64 MB PC133 SDRAM, i810 chipset based motherboard, 20 GB ATA/66 hard disk, onboard graphics card, 52x CD-ROM, IDE interface, onboard soundcard, 56K ESS internal modem, 15-inch monitor | 290.93 | 30.2 | 21.2 | 73 | 22.9 | B |
| Celeron 733 MHz processor, 64 MB SDRAM, 20 GB hard disk, onboard graphics card, 52x CD-ROM drive, onboard soundcard, 56K modem | 242 | 24.4 | 17.1 | 71 | 22.3 | B- |
| Coppermine 1 GHz processor, 64 MB SDRAM/133, i815 chipset based motherboard, Fujitsu MPG3204AT 20 GB hard disk, integrated graphics card, 52x CD-ROM drive, IDE interface, onboard soundcard, 14-inch monitor | 184.7 | 35.8 | 19.9 | 47 | 25.5 | B |
| Pentium III 800 MHz processor, 128 MB SDRAM, i815 chipset based motherboard, 20 GB hard disk, onboard graphics card, 48x CD-ROM drive, onboard soundcard, 56K modem | 185.73 | 36.5 | 19.9 | 55 | 28.8 | B+ |
| Pentium III 800 MHz processor, 64 MB SDRAM, SiS 630 chipset based motherboard, 10 GB ATA/66 hard disk, integrated graphics card, 52x CD-ROM drive, IDE interface, integrated soundcard, 15-inch monitor | 242.33 | 26.6 | 12.3 | 60 | Failed | B- |
| AMD Athlon 1 GHz processor, 256 MB RAM, ECS 266 chipset based motherboard, 20 GB ATA 100 hard disk drive, SiS 730 onboard graphics card, 52x CD-ROM drive, IDE interface, onboard soundcard, 56K modem, 17-inch monitor | 150 | 35.1 | 7.8 | 35 | 29.4 | B+ |
| AMD Athlon 850 MHz processor, 128 MB PC133 SDRAM, KM-133 based motherboard, 20 GB ATA/100 hard disk drive, S3 Pro Savage onboard graphics card, 52x CD-ROM drive, IDE interface, onboard soundcard, Ace internal 56K modem, 15-inch monitor | 175.2 | 26.3 | 7.8 | 40 | 30.6 | B |
| Pentium III 900 MHz processor, 64 MB SDRAM, 810 chipset based motherboard, 20 GB ATA/66 hard disk drive, integrated graphics card, 48x CD-ROM drive, integrated soundcard, 56K modem, 15-inch monitor | 212.33 | 27.5 | 18.2 | 51 | 27.6 | B |
| Pentium 4 1.4 GHz processor, 128 MB RDRAM, 40 GB hard disk drive, TNT2 M64 32 MB graphics card, 16x DVD drive, CMI 8738 soundcard, 56K modem | 273 | 68 | 21.3 | 37 | 33.1 | B |
| Pentium III 1GHz processor, 128 MB PC133 SDRAM, 815 chipset based motherboard, 20 GB ATA/66 hard disk drive, nVidia Riva TNT2 M64 32 MB graphics card, 56x CD-ROM drive, IDE interface, integrated soundcard, 56K Dlink modem, 15-inch monitor | 150.37 | 67.6 | 21.3 | 44 | 32.7 | B+ |
| Pentium 4 1.4 GHz processor, 128 MB PC 800 RDRAM, i850GB chipset based motherboard, 20 GB ATA/66 hard disk drive, TNT2 Ultra 32 MB graphics card, 52x CD-ROM drive, IDE interface, Lancer soundcard, Motorola 56K modem, 15-inch monitor | 217 | 68.2 | 21.2 | 39 | 22.4 | B |
| Intel Pentium 4 1.4 GHz processor, 128 MB PC 800 RDRAM, i850GB chipset based motherboard, 20 GB ATA/100 Quantum Fireball LCT hard disk drive, TNT2 M64 32 MB graphics card, 10x DVD drive, IDE interface, integrated soundcard, 15-inch monitor | 221.7 | 76.5 | 25.1 | 45 | 26.2 | B+ |
| Intel Pentium III 933 MHz processor, 64 MB PC133 SDRAM, i815 chipset based motherboard, 20 GB ATA/100 Fujitsu MPG3204AT hard disk drive, integrated graphics card, 52x CD-ROM drive, IDE interface, onboard soundcard, 15-inch monitor | 206 | 36.3 | 19.9 | 51 | 26.3 | B |
| Pentium 4 1.4 GHz processor, 128 MB RDRAM, i850 based motherboard, 20 GB hard disk drive, S3 Savage 4 16 MB graphics card, 12x DVD drive, AC97 Audio Controller onboard soundcard, 56K modem, 17-inch monitor | 2203 | 31.4 | 13.4 | 43 | 15.5 | B |
| Pentium III 866 MHz processor, 128 MB SDRAM, Intel 815 based motherboard, 20 GB ATA/100 hard disk drive, onboard graphics card and soundcard, 56K modem | 172.5 | 35.8 | 19.6 | 51 | 31.3 | B+ |
| Pentium III 1 GHz processor, 128 MB SDRAM, 40 GB ATA/100 hard disk drive, TNT 2 M64 graphics card, Sony 52x CD-ROM drive, onboard soundcard | 149 | 32.6 | 21.3 | 44 | 34.4 | B |
| Pentium 4 1.4 GHz processor, 128 MB RDRAM, i850GB chipset based motherboard, 40 GB ATA/100 hard disk drive, Riva TNT2 M64 graphics card, Sony 52x CD-ROM drive, onboard soundcard | 248 | 76.9 | 25.3 | 36 | 35.2 | B |
| Pentium III 866 MHz processor, 64 MB SDRAM, 20 GB hard disk drive, Intel 810 chipset based motherboard onboard graphics card, Sony CD-ROM drive (speed?), onboard soundcard | 215 | 26.5 | 18.8 | 54 | 27.4 | B |
| Pentium III 852 MHz processor, 64 MB SDRAM, Intel 810 based motherboard, 20 GB hard disk drive, onboard graphics card, 52x CD-ROM drive, onboard soundcard, 56K modem | 207 | 27.3 | 18.3 | 53 | 27.1 | B |
| Coppermine 1 GHz processor, 64 MB PC133 SDRAM, i815 based motherboard, 20 GB Fujitsu MPG3204AT hard disk drive, integrated graphics card, 52x CD-ROM drive, IDE interface, onboard soundcard, 15-inch monitor | 186.2 | 36.7 | 19.9 | 48 | 25.7 | B |
| AMD Athlon 1.4 GHz processor, 128 MB DDR RAM, KT266 based motherboard, 40 GB ATA/100 hard disk drive, Riva TNT2 64 MB graphics card, 8x DVD drive, IDE interface, Creative Vibra 128 soundcard, Ace 56K modem, 17-inch monitor | 104.93 | 77.1 | 25.3 | 24 | 41.2 | B+ |
| Pentium III 1 GHz processor, 64 MB SDRAM, i810 based motherboard, 20 GB ATA/66 hard disk drive, integrated graphics card, 48x CD-ROM drive, IDE interface, integrated soundcard, 56K modem, 15-inch monitor | 224.22 | 26.7 | 17.8 | 48 | 23.2 | B+ |
| Pentium 4 1.5 GHz processor, 128 MB RDRAM, i850GB based motherboard, 40 GB ATA/100 hard disk drive, GeForce 3 64 MB DDR graphics card, 48x CD-ROM drive, 12x DVD drive, IDE interface, Turtle Beach Santacruz soundcard, 17-inch monitor | 210.07 | 193.7 | 189 | 34 | 36.1 | A- |
| Pentium 4 1.4 GHz, 128 MB RDRAM, ASUS P4T-M, 40 GB ATA/100, GeForce 2MX 400 32 MB graphics card, 16x DVD Pioneer drive, IDE interface, Yamaha soundcard, 56K internal modem, 15-inch monitor | 219.36 | 47 | 23.3 | 35 | 32.4 | B+ |
| Pentium 4 1.4 GHz processor, 128 MB PC800 RDRAM, i850GB based motherboard, 20 GB ATA/66 hard disk drive, TNT2 M64 graphics card, Creative 12x DVD drive, IDE interface, onboard soundcard, 15-inch monitor | 223.5 | Failed | Failed | 38 | 31.5 | B |

**Give me all!**

The third set of PCs tested were in the price category of Rs 50,001 and above. For a price range such as this, you should expect high-performance systems. In fact, this range of PCs would appeal to users who are purely interested in the best in performance and features, and sometimes, simply the brand. Cost is not a criterion for them.




Performance systems: scorers in the Content Creation test

These PCs are chosen by hardcore professionals who need maximum computing power when it comes to demanding applications as seen in video and audio processing, graphics and animation. With the current configurations, the PCs that would fit this category would require at least Pentium 4 1.4 GHz and above or AMD Athlon 1.2 GHz with 256 MB of RAM, 7200-rpm 40-GB hard drive with a GeForce-class graphics card. Along with this, these users also would look at peripherals such as DVD or CD-RW drives.

We received only five PCs in this category. With Pentium 4 as well as Athlon processor-based PCs easily available for under Rs 50,000, it was the extra bundling of peripherals that made the difference in this category. Intel once again dominated in this segment and four out of five PCs were based on its processors (three were P4s and one was a P-III).

**Dell**, which is the new entrant in the comparison tests this year, dominated in the tests involving the graphics processor, primarily due to the fact that it came along with a GeForce3 having 64 MB DDR RAM onboard. For gamers this is the ultimate machine as the *Quake III* test results would indicate—it delivered a stunning 193.7 fps and 189 fps in normal and high quality, respectively. Although audio encoding was not the fastest, it was still able to complete the encoding within 34 seconds, next only to Amdell's score of 24 seconds. With an exotic choice of components like 12x/8x/32x CD-RW and a NEC DVD-ROM drive, along with Turtle Beach Santacruz 5.1 soundcard, the Dell Dimension 8100 boasted of a set of peripherals that could make any neighbour envious! This PC sported a duo-tone black and silver colour, making it stand apart from its rivals not only in performance and price but also in looks. Also, this is the only PC that is completely configurable on the company's Web site with a host of different hardware configurations—at varying prices according to components chosen, of course.

The second-best PC in this premium segment was the Amdell Monster PC 1400. Housing the formidable Athlon 1.4 GHz processor with 128 MB DDR RAM, it gave fantastic scores in Adobe Photoshop (in fact, the best in this category) of 104.93 seconds that is nearly half compared to the second best of Dell that took 210.07 seconds. This indicates that users requiring PC for data-intensive applications should definitely give a fair chance to this PC. Although in *Quake III* it scored 77.1 fps and 25.3 fps, respectively, in normal and high settings, which from an avid gamer's point of view is definitely not enough, casual gamers shouldn't be complaining. Furthermore, with the DVD and a creative Vibra 128 soundcard, it can double up as a good infotainment PC.

The HCL Beanstalk Omega is a also a good choice. Although it did not do very well in the test (Content Creation Winstone 2000 generated only 32.4) it had some good choice of components such as the Pioneer 16x DVD, ASUS P4T-M motherboard and the Yamaha soundcard. The only bottleneck was in the graphics subsystem with a GeForce2 MX 400, which generated 35.8 and 19.6 fps in *Quake III*, respectively, for normal and high settings.

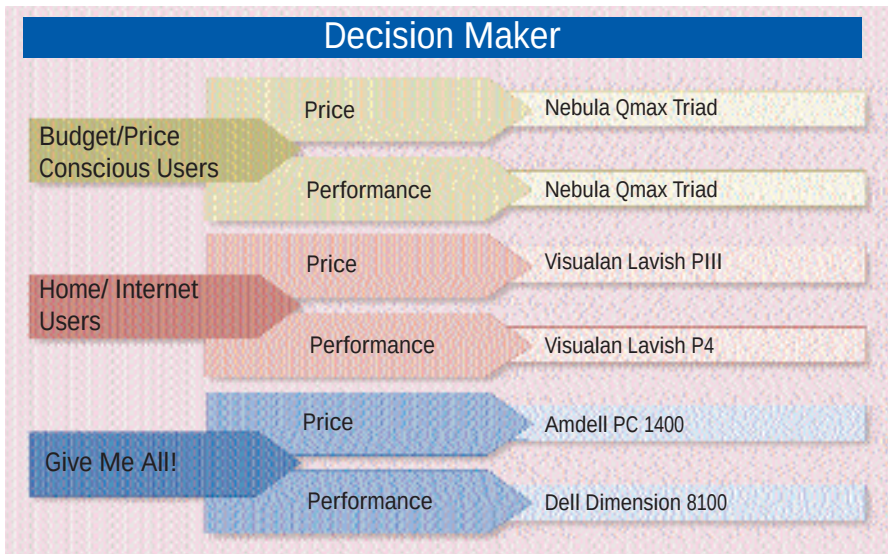
Zenith's PC in this category had a base configuration that most users might look for, but the graphics subsystem used was way under par and both the games test of *Quake III* and *Evolva* failed. The only bright spot in this PC was the Creative 12x DVD. You could consider this system if you are looking at pure processor power, but it may not be the best choice available in terms of overall value.

## CONCLUSION

In this roundup of branded PCs, we've seen a very wide variation on a number of grounds such as features available, platforms, designs and performance. Each of these three categories exhibited very close competition, especially in terms of features versus prices. With the cost of hardware spiralling downwards continually, even the casual home user can now afford a gigahertz-based computer. Couple this with the fast hard drives and graphics accelerators and you have power in your living room, power which was once within the reach of



Nebula Qmax Triad: good performance at an attractive price



only elite buyers and professionals.

The winners in each of the three categories we divided the computers into are as follows:

### Budget category

For those who are concerned with getting a decently configured computer to let them get by with conventional applications used in the home and office, these sub-Rs 35,000 machines proved to be worthy performers in office and other day-to-day applications.

The winner in this category was the **Nebula Qmax Triad** scoring a very respectable 46.13 per cent in the overall reckoning. Based upon a Coppermine 933 processor, this machine boasted of a very good configuration, considering the price. It also managed to bag the Best Value award—it turned out to be very competitively priced as it delivered best-of-class performance compared to similarly priced systems which performed nearly 30 per cent lower. Also, with a very well documented sales and service network across the country, this system is a good buy for the price-conscious user.



Visualan Lavish P4: lots of storage space

### Midrange category

In this category, we saw a wide variety of computers ranging from Intel to AMD processors. Here, the Best Performance award went to the **VisuaLan Lavish P4** with an overall score of 63.67. The good scores could be attributed to the high quality of system components such as the hard disk and the processor. Of special mention here is the Dart Emerald P4, which came in just a shade behind the VisuaLan Lavish P4.



Visualan Lavish PIII: a good choice of components

The Best Value award went to the **VisuaLan Lavish PIII**. This computer was also very well configured with a 40 GB hard disk and scored respectably across the various suites.

### Performance category

Finally, in the Rs 50,000+ category, there were just five players. These systems represented the pinnacle in terms of the choice of system components and performance.

The clear winner here was the **Dell Dimension 8100**. What was special about this system was the exotic choice of components. Configured completely off their Web site, this computer featured system components that are otherwise not available in the country, such as the sound-card, graphics accelerator, etc. These high-end components contributed to the brilliant performance of this machine. Coupled with the excellent styling and build quality, this machine had little competition and is a great choice for the power user looking for sturdy build quality and best-of-class performance.



Dell Dimension 8100: the GeForce3 at work

The Best Value honours went to the **Amdell Monster PC1400**. Based upon the formidable 1.4 GHz Athlon and using the latest in motherboard and memory architecture, this system was very finely honed to performance. In spite of the TNT2 M64 graphics card, the machine delivered top-notch performance but lacked the graphics horsepower. However, the rest of the system was very rich in specifications with DVD, a good set of speakers and Ethernet capability.



Amdell Monster PC 1400: excellent speed for audio ripping

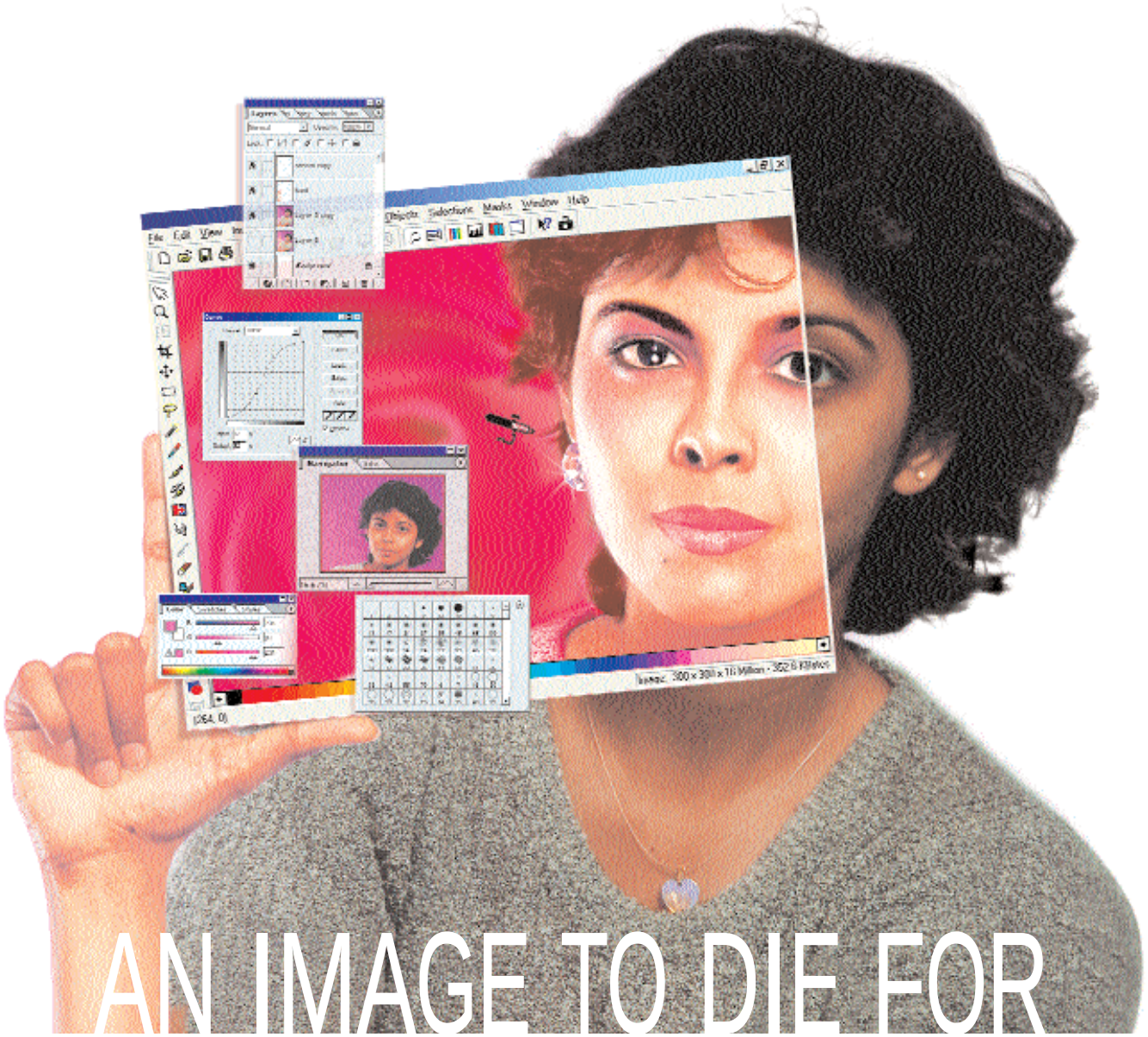
## Operating System Requirements

When buying a branded system, you usually have the choice of which operating system you want installed on your computer. Before deciding on one, you should make sure that your computer's configuration can support the operating system with the applications you'll be using. Otherwise, you might load the latest operating system to discover that your computer does not have the power to run your applications.

| Operating System | Minimum system requirements suggested by the company | Realistic minimum system requirements |
|---|---|---|
| Windows XP Professional | 300 Mhz processor, 128 MB RAM, 1.5 GB hard disk space, SVGA display (800x600), CD/DVD drive | 500 MHz processor, 256 MB RAM, 4 GB hard disk space, XGA (1024x768), CD/DVD drive, Direct3D-capable video card |
| Windows Me | Pentium 150, 32 MB RAM, 295 MB hard disk space, VGA display | P-II 300 MHz processor, 128 MB RAM, 600 MB hard disk, VGA display |
| Windows 98SE | 486DX/66 MHz or higher processor, 24 MB RAM, 315 MB hard disk space, VGA display (640x480) | 200 MHz processor, 64 MB RAM, 540 MB hard disk space, VGA display |
| Windows 2000 Professional | Pentium 133 MHz, 32 MB RAM, 650 MB hard disk space, VGA display | P-III 500 MHz, 128 MB RAM, 1 GB hard disk space, XGA display |
| Windows 2000 Server | Pentium 133 MHz, 256 MB RAM, 1GB hard disk space, VGA display | P-III 500 MHz, 384 MB RAM, 2 GB hard disk space, XGA display |
| Red Hat Linux | 486DX/66 MHz or higher processor, 24 MB RAM, 315 MB hard disk space, VGA display (640x480) | P-II 300 MHz, 64 MB RAM, 500 MB hard disk, VGA display |

**Photograph:** Mexy Xavier **Imaging:** Neeta Wadiker

# IN TEST: 5 IMAGE EDITING SOFTWARE



# AN IMAGE TO DIE FOR

**Want to put a glow on your friend's head? How about changing the colour of his shirt ? Welcome to the world of image editors**

MITUL MEHTA

A bike that looks more like a cheetah, a sepia tinge to a recently shot picture…we've all seen such fine examples of designing finesse in print advertisements. Designer's artistic prowess aside, the real accolades belong to the digital imagery software, which, with its extreme ease of use, can make any novice feel like a professional.

If you're eyeing the designing bandwagon you'll find an entire range of image editing software in the market. Some of these are targeted at the amateur user who just crops images or applies filter effects to photographs, while others are targeted at professionals working with multiple photographs at the same time in a single window, changing colour tones, masking images, and much more. Of late, software developers are integrating Web animation features in image editing software, a clear indication that they want to include Web designers in their client list.

We tested five image editing software: Adobe Photoshop 6.01, Gimp 1.2, Micrografx Picture Publisher 9, Paint Shop Pro 7 and QFX 7.

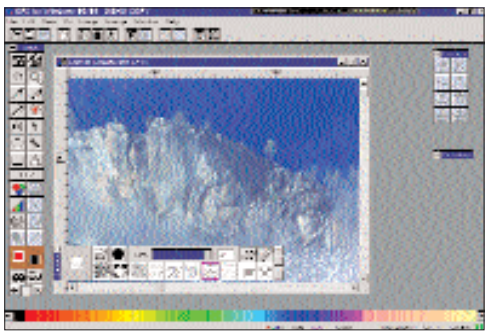
As a selection criteria, we chose software that provided features such as layers, filters, photo enhancing capabilities, support for common file saving formats such as JPEG, TIFF, GIF, etc as these criteria set apart a professional image editing software from a basic one.

**How easy is it really?**

When you hear the name of any professional software, do you get the jitters and start thinking that it would be impossible for you to work with such high-end software?

Well, if this is the case, then relax. It is not so difficult to learn such software really. One will need some sort of formal training and patience, of course, to get the hang of how the software works and what you can actually achieve with it. Mastering the art of digital imagery is not fundamentally as difficult as it is made out to be.

In the test we discovered that QFX7 was the most difficult software to work with. There is no way a novice or even an experienced user can go ahead and work with this software in spite of the fundamentals being the same.



QFX7 has an unintuitive Interface

This software performs dual functions: it is an image editor as well as a program for illustrations. QFX7 has two modes, the 'paint mode' and the 'draw mode', which the user has to constantly keep on juggling between if he has to edit the image or draw any diagrams. And then comes the interface. The developers of this package seem to be completely insensitive to the principles of interface design. This software does possess some reasonably good image editing capabilities but looking at the interface, we doubt if anybody would like to work with it. The amateurish style of buttons and the skimpy toolbar would put any serious digital artist off, not to mention the confused amateur.

**Adobe Photoshop's** interface, in contrast, provides a floating toolbar with well-defined icons as well as a horizontal toolbar, which lists extra functions of every tool. This puts the functionality of extra features at your fingertips, the way it should be.

The interfaces of Gimp and Paint Shop Pro will not appeal to the aesthetically inclined. Gimp, as it comes from the Linux world, looks quite different from any other Windows program. The menu rendering style, the pointer arrow twisted inverse and the floating toolbars that just fall plop into the whole soup of an interface do not read 'user friendly' in any way.

Paint Shop Pro's toolbar and icons appear very bland and somewhat old when compared to the smooth and suave Photoshop icons and toolbars.

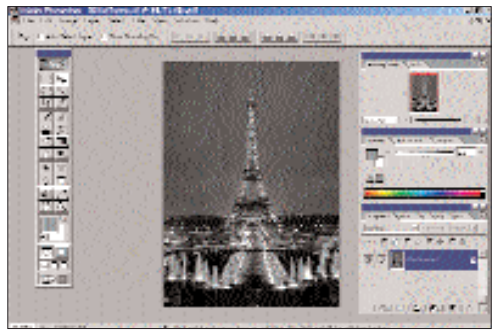
To put it simply, nothing comes close to Photoshop when it comes to the interface.

## TEST PROCESS

We tested the software for the features offered. In particular, we tested for installation size and memory consumption, ease of use and features. The last factor always forms an extremely important part of any software. Here, we considered the following features: the facility to work with layers, the number of predefined set of filters, masking, twain compatibility (the functionality of directly picking up images from the scanner), the ability to convert images to high resolution, the facility of adding gradients to your work, and the ability to change colour channels from RGB to CMYK mode or vice versa.

We also looked for drawing tools that allow inclusion of diagrams in the work without having to minimise the photo editing software and open a separate drawing software. To check how easy the software really was while working, we tried importing a JPEG photograph and working on it with various tools in the software. We checked whether the software supported the common file formats such as TIFF, JPG, GIF, PSD, PNG, and so on.

Most users tend to get confused by the plethora of features provided in professional software. Hence, while evaluating this feature, we checked whether it explained the basic operations of the software and if it provided in-depth examples that would be helpful for novices.



Photoshop 6: an easy-to-use and intuitive interface

**Features**

**Layers:** With the support of layers one can work with multiple pictures on different layers in the same window. It is easy to hide the objects placed on every individual layer and if the software supports blending capabilities, one can change the overall look of the picture by applying options such as soft light, dissolve, multiply, hard light, etc. Thus, with multiple layering, one can do wonders with the photographs.



The Layer Style in Photoshop 6

QFX7 takes a beating again by providing layer support only in the draw mode and by not providing any support where it is needed the most—the

Find it on digit interactive

**More Info** on the test process and the products tested. Check out **Mindware**

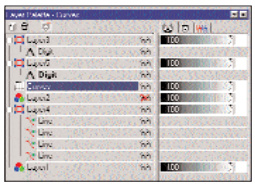
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paint mode. Micrografx does have image layers but it functions quite differently when compared to Adobe Photoshop or any other image editing software. It works on the basis of objects, which means that various images can be added as objects on different layers and then arranged through buttons, but no blending modes are provided. One cannot hide them all—what one can do is send the image of one layer behind or in front of another layer, or merge all the layers to the base layer or the background layer.

In comparison to this, the functionality provided by **Adobe Photoshop** leaves one stunned. Not only does it have multiple layer support with blending and transparency options, but one can also move the layers manually. In this version of Photoshop, one can see distinctly the effects applied to the layers on the layers themselves. And one can hide effects by a simple click. Multiple options for locking of layers is also a first in this image editing software from the Adobe stable. Photoshop also provides various features such as accessing filters by right-clicking on a layer, which simplifies every user's work.

Paint Shop Pro provides almost the same functionality as Photoshop but the irritating auto-roll feature of the layer palette makes one wonder where the layers have disappeared. If you plan to use this, make sure that as soon as you open the software, you disable this option from the Preferences menu. The extremely small view of the layer palette will make one go bonkers if one were to work with, say, more than 20 layers. The developers need to pay more attention and improve this feature.



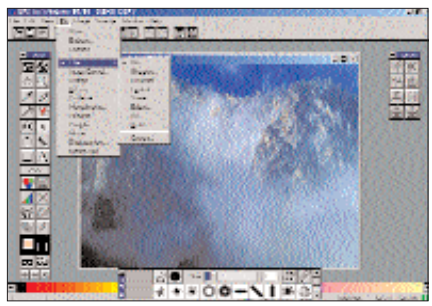
Paint Shop Pro has a very cramped layer style

Like Photoshop, Gimp provides the user with functions such as blending options, merging of various layers and increasing or decreasing the transparency.

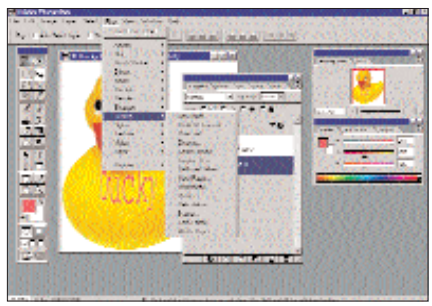
**Filters:** Ever wondered how the sky colour changes dramatically, or how a bright sun appears conspicuously in a dark picture? Well, the credit goes to filters! Jasc Paint Shop Pro boasts a set of 75 filters that let users create ripple effects or a lens flare and even remove scratches from a photograph.

QFX7 again fails to provide the user an extensive list of filters whereby he can create those jazzy effects. It provides the user with just a handful of basic filters such as glow, emboss, monochrome, etc.

Open **Photoshop** and your eyebrows start to rise as the huge set of filters drop down from the menu. From motion blur to lens flare and generating 3D effects, one can do it all with just this software, eliminating the need for buying and installing a different set of plugins. Hats off to the developers of this software for paying close attention to the needs of the professional user and seeing to it that only those set of filters are created which are actually used by them, and not bundle just any filters to compete with other software on the basis of numbers.



QFX7 provides just the basic set of filters



Photshop 6 has quite a few built-in filters and you can get more filters for free

Gimp, like Photoshop, also possesses a plethora of filters rendering various glass effects, motion blur, bump map as well as the widely used lightning effects. It offers the user a wider range of options.

Micrografx has a neat and a sizeable amount of filters such as image warping and red eye removal. It also has wizards to create some additional effects such as 3D puzzle piece, cool text, button maker, etc. In the filter menu, besides the general and texture effect, a host of other macro effects are provided.

**Drawing tools:** We all agree that it's pretty irritating to keep switching between two programs constantly. At times it becomes a problem when two professional programs are running simultaneously as there is a high chance of running out of system resources. Thus, it would be considered beneficial to the user if the image editing software provided some elementary tools to enable one to draw in the software itself.

Micrografx has a pencil tool which acts as a free form tool allowing one to draw the way one wants. Here, using the same tool, one can outline the size from the extra options seen in the toolbar. It also provides various blending options in the draw mode, which is strange because one would expect to have this feature in the image-editing mode.

Gimp, like Photoshop, provides the

## Colour Modes

There are two popular types of colour modes: RGB and CMYK. The RGB mode consists of three colour channels (red, green and blue). This mode is called the 'additive colour mode' as the red, blue and green colours are mixed in different proportions and intensities to create white colour. This process can be more clearly understood by taking the example of one's monitor, which creates colour by emitting light through red, blue and green phosphors.

Although every person works in RGB mode when working with images, the final image is changed to CMYK mode when it goes for printing, which consists of four channels: cyan, magenta, yellow and black.

The first thing that one notices while converting an image from RGB to CMYK is the colour loss and the increase in file size. If that's the case then why do people convert images to CMYK? That's because to reproduce colour in print, you use inks in different proportions. Here cyan, magenta and yellow combine to absorb the entire colour and produce black. This is the reason why they are known as 'subtractive colours'.

Since all inks contain certain kinds of impurities, the first three colours combine to give a muddy colour which then has to be combined with black (K) to generate the true colour. Therefore, the digital artist will have to convert the image to CMYK before printing.

same sort of utilities to draw diagrams.

QFX7, for once, did not disappoint the user. By activating the draw mode one can draw free form diagrams with the pencil tool and unlike the paint mode, one can work on layers in the draw mode. It also equips the user with different brush strokes and sizes and one can increase or decrease the softness of the strokes.

Jasc Paint Shop Pro's tools are quite similar to Photoshop—the pencil for free hand drawing, a clone brush to clone objects, a paint brush, air brush, etc. And work is just fine though it isn't as customisable as Adobe Photoshop. An interesting feature here is the colourful picture tube, which allows you to paint full colour random thumbnail images.

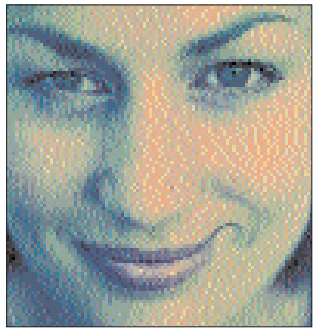
**Image formats:** Depending on the use that is to be made of the image, say print or Web, you will need to choose a suitable image format. This also has an impact on the file size of the image. For example, if one imports an image, does the appropriate work and saves the image as a TIFF (tagged information file format) file, then this high-resolution image will cost a few MBs of hard disk space.

Proprietary file formats such as Adobe's PSD can offer quite a lot of added benefits in terms of saving the image in its original and perfectly editable format, but it surely isn't the optimal format for delivering files to other people, or for that matter, using the image on the Web.

While using proprietary formats, you can save all the layers, vectors and text separately and in its true editable form, and re-use it as you wish. Adobe Photoshop, Jasc Paint Shop Pro and QFX7 allow one to save the image in various formats, including the most common ones like .jpg, .gif and .psd. Gimp doesn't support saving the image in .gif and .tiff format, whereas Micrografx only supports .ppf and .bmp formats. However, it does allow one to export the image and apply JPEG and GIF compressions but it cannot save them in that format.

**Additional features:** Most of the software had some additional features that added a punch to the functionality. Adobe Photoshop 6.01 has a new feature called 'Liquify', which allows you to do some amazing things such as selecting a particular portion of the image and bloating it, twirling it clockwise and anticlockwise, shifting pixels, and thawing and freezing it.

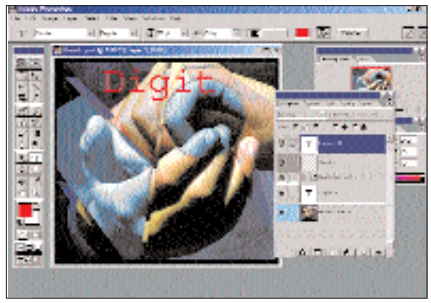
The Type tool of Photoshop has improved dramatically. The text can now be edited onscreen directly instead of having to open another text-editing



Wonders achieved through the Liquify tool of Photoshop 6

window, which is the norm in the other software.

Features such as adding notes or audio annotations in an image editing software




In Photoshop 6, you can edit text on screen

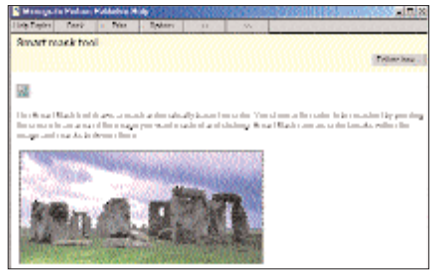
might appear strange but can be very useful when the same file is modified from time to time. It's nice to have the ability to add active comments to an image, just like a word document, if it is sent for approval or review to another person. Hence, with the facility of adding notes and audio annotations, one can record comments and send it across.

For drawing lines, circles and other such objects and text, vector support is helpful for scaling the image or that particular component of the image whenever the need arises.

**Help!**

Help files will always be accessed, whether it is a novice at work, an intermediate user or a professional. The help files of QFX7 are self explanatory though not as elaborate as one would expect.

Jasc Paint Shop Pro provides the user with extremely detailed help such as explaining the basic fundamentals of



Micrografx Publisher provides help through visuals

image editing and how to go about working with each and every feature of the software. This makes things easier as it supports context-sensitive help.

Gimp also supports context-sensitive

## Effects Galore

"Oh God, how can one possibly do that?" Now you will get the answer to that question and many more whenever you see a startling image with a fiery finish or water droplets suspended in air with some crazed-out effect.

The answer lies in plug-ins. There are various plug-ins available for download (shareware as well as freeware) and users can install them in the same directory where the image editing software is. Some popular plugins are KPT and Eyecandy, which are used by many people in the industry.



EyeCandy's fire effect

Here's where you can get some popular plugins:

**Shareware**

Dream Suite from auto fx software (**www.auotfx.com**)

Eyecandy and Xenofex from Alien Skin (**www.alienskin.com**)

KPT from Corel (**www3.corel.com**)

Intellihance Pro, Mask Pro and Photo Frame from **www.extensis.com**

**Freeware**

Filter Factory Galleries from **http://showcase.netins.net/web/wolf359/plugins.htm**

Media Spark Filters from **www.mediaspark.com**

## SCORE BOARD The Image Editing Software

| | Adobe Photshop 6.01 | Gimp 1.2 | Jasc Paintshop Pro 7 | Micrografx Picture Publisher 9 | QFX 7 |
|---|---|---|---|---|---|
| Contact Details | Adobe Systems India Pvt. Ltd | The Gimp Organisation | Jasc Software | Micrografx | QFX Software |
| Telephone | 0118-4532026 | — | 011- 332 9199 | — | — |
| Fax | 0118-4532010 | — | 011- 614 2999 | — | — |
| E-mail | sandeep@adobe.com | — | — | — | — |
| Web site | www.adobe.com | www.gimp.org | www.jasc.com | www.micrografx.com | www.qfx.com |
| Price | Rs 39,456 | Freeware | Rs 5,995 | Rs 3,317 approx ($69.95) | Rs 18,920 approx ($399) |
| Features | | | | | |
| (i) Layers | Yes | Yes | Yes | Yes | Only in Draw mode |
| (ii) Filters | Yes | Yes | Yes | Yes | Yes |
| (iii) Masking | Yes | Yes | Yes | Yes | Yes |
| (iv) Support For Scanner | Yes | Yes | Yes | Yes | Yes |
| (v) Support for CMYK | Yes | No | Yes | Yes | Yes |
| Drawing tools | Yes | Yes | Yes | Yes | Yes |
| Importing images from scanner | Yes | Yes | Yes | Yes | Yes |
| File saving formats supported | JPEG, GIF, TIFF, PSD, etc | Cannot save in TIFF and GIF formats | JPEG, GIF, TIFF, PSD, etc | PPF and BMP only | JPEG, GIF, TIFF, PSD, etc |
| Ratings | A- | B | B+ | B | B- |

help but fails to provide sufficient information, as most of the help sections seem to be under construction.

Micrografx provides a decent set of help files and the developers have taken the pain to explain many features through visual examples.

Coming back to Adobe Photoshop, the help files are really impressive with a lot of attention paid to detail. These files include a portrayal of image editing fundamentals along with descriptions of each and every tool and feature in the software aided by illustrative examples.

### A price to pay

Does it make sense to buy expensive software if you're not going to use the extra features? Obviously not, so you, as the end user, must identify the purpose you need the software for, and then opt for the right software. The reason is simple: professional software doesn't come cheap.

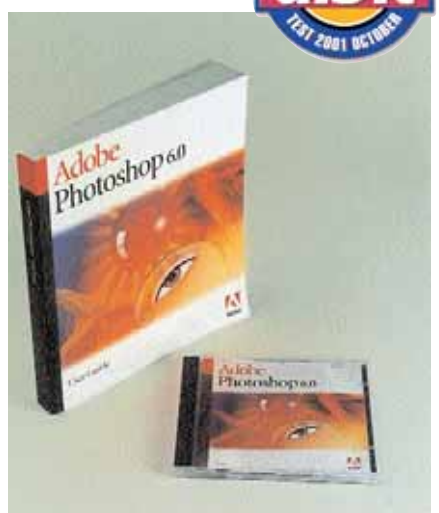
The extremely functional Adobe Photoshop 6 costs approximately Rs 39,456 while the equally versatile Jasc Paint Shop Pro7 costs Rs 5,995. So if you are not going to use the full potency of Photoshop and can compromise on certain functionalities, then Paint Shop Pro should be a reasonably cheap and justifiable option.

QFX7 gives you a shock with a price tag of Rs 18,920 for something that is not so fundamentally brilliant. Micrografx is available for approximately Rs 3,500, providing a good solution for home users.

## CONCLUSION

In this software shootout, one can see that each software reviewed offers easy-to-use features and tries extending its functionalities by bundling an animation package so as to not disappoint the Web community.

However, given the range of features and the functionality offered, **Adobe's Photoshop** emerges the clear winner. QFX7 seemed to be the worst software to deal with. It did provide some decent functionality but as far as the interface and operations go, it is not worth the money. Gimp does offer some competition to Photoshop




Adobe Photshop 6: the most functional and versatile image editing software

but it loses out on stability, interface and support for CMYK. Micrografx Picture Publisher boasts some very cool filters but it does not have any blending modes for the layers and neither can it save in the most commonly used file extension such as JPEG, GIF, TIFF and PSD.

The only software that provides stiff competition to Photoshop is JASC Paint Shop Pro7. It stands second in our ratings as it provides all functionalities which a graphic professional would look for—colour correction capabilities, photo enhancement, layers, filters, and so on. And all this comes at an extremely affordable price. However, it loses out owing to its poor interface, and because of the better ease of use and a couple of additional features which Photoshop has recently added.

Photoshop also provides more filters, giving the user a wider choice to give fuller expression to his creativity. The action script makes one's job easier as one can record and play one's actions. It also has a set of predefined actions, which the user can apply to his work by just a click. Some additional features such as adding notes or audio annotation to images, text directly appearing on the user's screen and the predefined warping of text makes Photoshop stand apart from the rest of the image editing software.

At the end of the creative day, if one were to make a choice for that perfect digital imaging software, it would be nothing but Photoshop.

IN TEST: 10 BROWSERS

Illustration: Mahesh Benkar




# Surf Wars

**There are browsers and then there are browsers. Let's take a look at who stands head and shoulders above the others**

MITUL MEHTA and VARUN SINGH

Wars have been waged and casualties suffered. Coffee vs Toffee, Mac vs PC, Windows vs Linux…these are some of the memorable ones. Here and now you shall be witness to yet another battle royale—the battle between your favourite browsers.

Netscape used to be the king of browsers, but ever since Internet Explorer 3.0 was launched, it has been losing popularity and market share. This can be attributed to the aggressive push Microsoft has given its Internet Explorer by integrating it fully into Windows and pre-bundling it as a requirement for many other programs to work. This has helped speed up the development of many other browsers, resulting in an onslaught of alternatives that promise to be as functional as, or even better than, IE and Netscape.

With new competitors pouring into the arena, the choice becomes more difficult. If you use the Windows OS, you already have a browser, Internet Explorer, a slow-moving beast with a past chequered by bugs and security loopholes. But if you seek change, all you have to do is resort to some quick surfing and avail of numerous options with better performance, more features and lighter browsers with low memory usage.

Just a look at the list of browsers available can send you into a tizzy. Download.com has more than a hundred browsers listed. There are a number of theme-based browsers such as the Christmas Browser (with a Christmas theme for

## TEST PROCESS

**We tested each browser on five fronts:**

**Features**

Here we looked for features such as the functionality offered by the e-mail client bundled with the browser, facility for offline browsing, whether there is an Instant Messenger and how well integrated it is with the browser, whether it includes a bare bones, simple HTML editor, support for SSL (Secure Socket Layer) and 128-bit encryption, plugins, and any additional features that enhance the usability or functionality of the browser.

**Size and usability**

Here we checked for the amount of disk space a full install of a browser would take up, and the total memory utilised by a single instance of the browser (a single window and a single Web site open) while loading a standard HTML page. We also checked the load-up time (the time taken by the browser to launch after clicking on the icon).

**Ease of use**

We looked for features such as a shortcuts and the ability to complete a URL automatically. We examined the look and feel—the aesthetics and accessibility of the browsers. We also examined the tools that make it easier to find and manage information and links on the Internet.

**Performance**

We ran the Caffeine Mark benchmark to check the browser's Java performance. Another test we ran was ZD's iBench, which is a measure of the Web page rendering speeds, cache retrieval speeds and refresh speeds of an Internet browser.

**Compatibility**

We checked for the browser's ability to display Cascading Style Sheets (CSS), nested tables, layers and other such HTML content.

### The Weightages given to Different Parameters

- Features (e-mail client, offline browsing, instant messenger, HTML editor, high encryption, plugin support, miscellaneous features) – 30 points
- HTML Compatibility – 10 points
- Ease of Use (shortcuts and auto-complete, look and feel, search and other tools) – 20 points
- Performance (Caffeine bench, iBench) – 20 points
- Size and usability (install size, memory usage, load-up time) – 20 points



Internet Explorer), browsers that use IE's engine to achieve HTML rendering etc, and offline browsers. Other browsers include those made to serve the needs of specific users (such as children or those who are visually impaired).

We tested the browsers that were meant to serve as a complete package in themselves, and those that serve a specific purpose. The complete ones were those that had their own rendering engine (Mozilla, Opera, and Internet Explorer). The other browsers were those that enhanced the browsing experience by offering either ease of use, multiple sites in one common window, a customisable interface or were exceptionally light browsers (K-Meleon, MSN Explorer, NetCaptor, NeoPlanet).



NeoPlanet 5.2 has a cool looking interface

### The Internet Communication Suites

These packages are more than just browsers—they include a host of other utilities such as an instant messenger, e-mail client, media player, download manager, etc. They are meant to serve a more holistic purpose of acting as a one-point communications and Internet tool for you. Among the browsers tested in this category, IE 6 and NeoPlanet were based on the Internet Explorer engine, while Netscape 4.78, Netscape 6.1 and Mozilla 0.9.3 were based on the Netscape engine.

### Speed and power

Faster, simpler and more powerful browsing—who wouldn't like the idea? Most browsers now have the auto complete feature, which makes for smart browsing. You just have to type in the name of the Web site and leave the rest to the browser.

Different browsers have different shortcuts. If you are an Internet Explorer user, all you have to do is to key in the Web site's URL, press [Ctrl] and hit [Enter] (only if the Web site ends in .com). Similarly, if you are a Netscape or a Mozilla user, add the name followed by .com and hit Enter, and you reach your Web site. For NeoPlanet you can just type in the name and press Enter and it automatically takes you to the site.

Both versions of Netscape, Mozilla and NeoPlanet by default have a side tab bar, which

Find it on digit interactive

**More Info** on the test process and the products tested, check out **Mindware**

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Content filtering in IE 6

contains a host of other links on various topics. However, if you feel cheated by the fact that their viewing space has been eaten up, you can easily do away with the side tab bar by customising the interface.

Another feature that enhances a browser's usability is if a search engine is embedded into the browser itself. All five browsers in this category allow you to choose your favourite search engine as a default and the results are displayed within the browser itself. For instance, NeoPlanet uses the Lycos search bot to search for relevant links but there is little you can do to customise it. IE displays the result in the side bar by using MSN by default, whereas Netscape uses its own Netscape.com engine to perform such searches. However, in both cases you can choose to use other engines such as Google or Yahoo!.

Browsers tend to occupy quite a bit of your hard disk space, especially if they bundle a lot of small utilities. Netscape and Internet Explorer are space hoggers as they come bundled with a lot of extras, whereas Mozilla occupies just 20 MB of space. Though NeoPlanet takes only 9 MB to install, it requires Internet Explorer to be already installed on your machine.

As far as the load-up time is concerned, NeoPlanet was the slowest of the lot, while Internet Explorer was the fastest. Netscape 6.1 surprised us by loading up quite fast; its previous version had an extremely slow load-up time and was also extremely resource hungry. With this version Netscape seems to have ironed out this problem by using the same technology that Internet Explorer uses. The quick load feature loads up some of the frequently used Netscape files into the memory as soon as the machine starts. Although this adds around 3 to 6 seconds to your system startup time, it makes opening up a browser window almost as fast as Internet Explorer. Internet Explorer loads almost all of its files as soon as your Windows Explorer loads during boot-up.

### The goodies

What better news for a cyber junkie than a browser that comes with a host of utilities such as instant messaging, an e-mail client and other goodies but at the same time doesn't compromise on surfing speed?

The new version of Internet Explorer not only loads up as fast as its previous version, but also bundles a host of new features, which were missing in the other browsers. One such feature, image resizing, allows you to resize and fit a large image in your browser window without having to scroll down your page. An automatic image bar pops up whenever you move your mouse over an image, allowing you to save, print or e-mail the image with a click rather than using the cumbersome right-click menu.

In comparison to this, Netscape 6.1 comes with multiple profiles, which allows several people to use the same browser without having to share favourites and other details such as mails and cache. It is also the only browser that provides the option of remembering your passwords and login names while preventing others from misusing this data. Using its password manager program, you can choose whether or not to let other users see your password.



Image resizing in IE6

NeoPlanet (which also has the multiple profiles option) and Internet Explorer also provide the option for remembering your password and login names, but you cannot prevent them from being viewed by others.

**Instant messaging:** All five browsers in this category incorporate an instant messenger. Both versions of Netscape come with the AOL instant messenger, while MSN messenger is bundled with Internet Explorer. Mozilla allows you to connect to Chatzilla, a program for chatting on the IRC network. In Netscape, you can see your buddy list right on the screen in the side bar, so you don't have to launch the messenger, as in the case of MSN messenger. Both AOL and MSN messenger are at par in terms of functionality as they allow the exchange of files, voice chat, changing one's status, etc. The NeoPlanet browser features fully integrated instant messaging called Net Clubs, (you have to register and login to make it functional) which gives you access to bulletin boards, galleries and chat rooms.

**Screening for security:** The Internet is a resource of information, not to mention the vast range of services that you can avail from the Net for free. But for you to take full advantage of services such as online banking and shopping, you should choose a browser that supports high encryption (128 bit) for security of online transactions. And if you have children, you'd also

## iBench Explained

To test a Web browser's HTML rendering and loading performance, we used ZD's iBench benchmark HTML load-up test. We ran this test on a 100 Mbps LAN connection with one server and one client, hence eliminating any other bottlenecks that could slow down the test. This test automatically loads up over 120 HTML pages within a short span of time. Even the slowest of the browsers finished the test well within 110 seconds, which makes the average per page load-up time faster than one page a second. This figure is a lot faster than what users would achieve on a dial-up or a broadband Internet connection, which basically means that you won't be able to notice any difference in browsing speeds just by changing browsers when your connection is slow. Hence, at the end of the day there would be virtually no difference between performances of two browsers if your bandwidth is much lower than the fast speed at which your browser can process information.

want a browser that enables you to restrict access to sites with questionable content.

All five browsers provided 128-bit encryption. However, only Internet Explorer and NeoPlanet had a feature that allows you to set different levels for blocking Web sites containing sex, nudity, violence and profanity.

**Mail client:** An integrated e-mail client that allows you to download your e-mail and read it offline adds to the functionality of a browser. All five browsers in this category came with an e-mail client with sufficient options such as maintaining your contacts and creating separate folders for the different types of mail you get.

Outlook Express, which comes bundled with Internet Explorer, is known for its simple looks and functionality but is vulnerable to viruses that use Visual Basic scripting. The e-mail client in Netscape (both versions) and Mozilla (which uses the same e-mail client as Netscape) are safer on this front as they do not support VB scripting.

An interesting feature in NeoPlanet's e-mail client is the extremely friendly audio notification when a new mail arrives.

The older versions of Internet Explorer had an HTML editor, which was capable of some basic editing, but the newer version fails to provide one. Both versions of Netscape include a basic HTML editor, the 'Composer' for HTML editing.

**Efficient downloads:** Nothing can be more frustrating than having to start a download all over again because of disruptions in connection while downloading files over a dial-up. This is where download managers come in. They can be easily downloaded from the Net, but if the browser bundles one, it adds to the functionality.

Netscape 4.78, Mozilla and Internet Explorer do not seem have to understood this problem of most users and are yet to include this feature. Netscape 6.1 and NeoPlanet 5.2 have done their homework well and have made sure they include this almost mandatory feature.

One feature in NeoPlanet that needs special mention is the Modem Booster, which lets you tweak your Internet connection for maximum performance by changing the MTU settings (a parameter that optimises the bandwidth of the TCP/IP protocol).

**Reducing the phone bills:** Reading all those textually dense pages on the Net while online could be really expensive. Instead, use the offline-browsing feature if your browser supports it. Though Netscape 4.78 and its previous versions had this feature, you could not read pages offline by going to the history folder where all the Web pages visited are stored. Netscape 6.1, Mozilla, NeoPlanet and Internet Explorer allow you to do this.



Elegant looking MSN Explorer

## Performance

To evaluate the performance of the browsers we ran ZD's iBench, which is a measure of the Web page rendering speeds, cache retrieval speeds and refresh speeds of an Internet browser. In this test various sets of HTML pages were loaded in loops and we noted down the time taken.

Internet Explorer was the fastest in loading and rendering pages. Netscape 6.1 and Mozilla took twice as long as Internet Explorer to load the pages and we couldn't see the pages while the browsers loaded and rendered them. Surprisingly, NeoPlanet took the longest to complete the test, even though it uses Internet Explorer's engine.

Since there are numerous Java-based applications on the Internet, a browser's Java performance becomes critical. To test this, we ran Pen Dragon's Caffeine Mark 3.0. This test measures the different features of the JVM (Java Virtual Machine) and returns a score that roughly corelates with the number of Java instructions executed per second. In this test Mozilla failed to even load the Java applet in spite of downloading the Java plugin. NeoPlanet 5.2 topped by logging a score of 18510. Both the Netscape browsers performed quite poorly and Netscape 4.78 generated the lowest score amongst all the browsers in this category.

## Function-specific browsers

In the second category of browsers we included those that offered certain specific functions. For instance, NetCaptor, Opera and Webhunter Power allow you to browse multiple Web sites in a single window, whereas MSN Explorer provides the facility of online storage and is also ideal for those who share their computers.

## Speed and power

If you were to go by looks, then MSN Explorer beats just about every browser in this category. Its colourful interface and minimal buttons make it stand apart from others. NetCaptor 6.5, which uses Internet Explorer's engine, has an extremely simple interface with large buttons on the toolbar—it leaves a lot to be desired as far as looks are concerned. K-Meleon has the worst interface amongst them all. But there's more to browsers than looks. Users of Opera, NetCaptor and

# Power Surfing

Does your Internet connection remind you of travelling by a bullock cart? Well, besides tweaking your connection settings, changing a few settings in your browser can also make it work faster.

**Increase your cache size:** Whenever you visit a Web site, the various elements of the site are stored in the disk cache. If you increase the cache size, more pages can be stored, thereby making it load faster. However, if you have a fast broadband connection, more cache can actually slow down the rendering of a page, since it takes more time to go through the cache than to download from the site. Also defragment your hard disk regularly. In Netscape 6 and Opera, you have options for changing the memory cache too, so you can choose for more memory cache and lesser disk cache to improve performance.

**Turn off Multimedia Features:** If you are just browsing for textual information, disable the options for downloading images, sounds and animation.

**Turn off Active X and Java:** Most Web sites today use ActiveX and Java, which slow down the loading of Web pages and also make your browser consume more memory. ActiveX and Java can even be security hazards.

**Smart Browsing:** You can surf while simultaneously reading information on the Net by opening a new browser window. This saves a lot of time.

## SCORE BOARD Specifications

**A Look at the Browsers**

| | The Internet Communication Suites | | | | | Functional Browsers | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Internet Explorer 6 | Mozilla 0.9.3 | NeoPlanet 5.2 | Netscape 4.78 | Netscape 6.1 | K-Meleon 0.4 | MSN Explorer | Netcaptor 6.5 | Opera 5.12 | Web Hunter Power Browser 5 |
| Website | www.microsoft.com/windows/ie/ | www.mozilla.org | www.neoplanet.com | http://home.netscape.com | http://home.netscape.com | www.kmeleon.org | http://explorer.msn.com/home.htm | www.netcaptor.com | www.opera.com | www.webhunter.com |
| Installation size | 160 MB | 19 MB | 9 MB | 40 MB | 40 MB | 8 MB | 21 MB | 1.5 MB | 36 MB | 4 MB |
| Memory Consumed | 14.6 MB | 27.7 MB | 23.5 MB | 23 MB | 28.9 MB | 22 MB | 25.3MB | 16.0 MB | 14.5 MB | 21.8 MB |
| License Type | Freeware | Freeware | Freeware | Freeware | Freeware | Freeware | Freeware | Shareware | Adware | Freeware |
| iBench Scores * | 53.74 | 136.46 | 153.37 | 111.16 | 141.68 | 147.34 | 54.35 | 56.6 | 67.14 | 54.77 |
| CaffieneMark Scores | 18484.3 | Failed | 18510 | 8240 | 9145.3 | Failed | 18314.3 | 18344.3 | 9388.3 | 18320 |
| Email Client | Yes | Yes | Yes | Yes | Yes | No | Yes (Hotmail Offline Backup) | No | Yes | No |
| Instant Messenger | Yes | No | Yes | Yes | Yes | No | Yes | No | Yes | No |
| HTML Editor | No | Yes | No | Yes | Yes | No | No | No | No | No |
| Skinable | No | Yes | Yes | No | Yes | No | No | No | Yes | No |
| Rating | A- | A- | B+ | A- | A | B | B+ | A- | A | B |
| * Lower scores indicate better performance | | | | | | | | | | |

MSN Explorer only have to key in the name of the Web site while accessing any site.

Considering that not many features are bundled with these browsers, they are really small in size. NetCaptor is the lightest, occupying just 1.5 MB hard disk space. Opera and MSN Explorer occupy the most hard disk space. Even though they require Internet Explorer to be already installed in your computer, MSN Explorer takes an additional 21 MB of hard disk space whereas Opera takes 39 MB.

Since these browsers have a comparatively small installation size, you would obviously expect them to load quickly. And they don't disappoint you on this front, with the exception of MSN Explorer. Anything less than 128 MB of RAM is not good enough for running this browser as it loads up a lot of graphics, which take up considerably more resources than Internet Explorer.

### The goodies

If quick and efficient browsing is what you are looking for, and you are tired of opening a new window for every Web page, then Opera 5.12, NetCaptor and Web Hunter Power browser are what you should be looking at. All three allow you to browse multiple sites in the very same window, similar to the multi-document view of Adobe Photoshop or other such applications that let you edit multiple documents in the same window.

NetCaptor also allows you to create a single bookmark for a group of sites (Captor groups) that you frequently visit, and with a single click, load up that whole category simultaneously. The ability to group similar sites, such as news sites or entertainment sites or search engines, and open them together can help you to better organise your online activities.

As far those annoying automatic pop up windows go, both Opera and NetCaptor save you the irritation by not displaying these windows.




NetCaptor offers multiple browsing capability

Opera was the only browser in this category that had its own light HTML rendering engine. Though very fast and efficient, it renders Web pages in a slightly different manner; they look a bit cramped when compared to other browsers. It uses the Java plugin from Sun to render the pages.

Web Hunter Power browser offered some curious features that had little practical use. For instance, the Spell Checker option wherein you can check spellings on the Web page you are viewing, or the facility to add a 3D border to the browser window, use flat scroll bars, etc. The Auto Complete feature in this browser does not perform the usual task of completing login names and passwords. Instead, it refers to a set of words already added in a list; in case your word matches with one from the dictionary, it is displayed for selection.

**Screening for security:** Security is where most of these browsers were found lacking. Except for MSN Explorer and Opera, none of the browsers provide you with high encryption. NetCaptor and Web Hunter use Internet Explorer to open Web pages that support 128-bit encryption, whereas K-Meleon, which uses Netscape's Gecko engine, cannot open them at all.

Nor do they include within themselves

the facility of blocking objectionable Web sites, except for MSN Explorer, which allows you to create a Kid Passport wherein access rights can be defined. NetCaptor and Web Hunter Browser once again make use of Internet Explorer to provide you the same, while K-Meleon again lags behind in this feature.

**Performance**

A majority of the browsers we tested in this category use Internet Explorer's engine. Hence, their performance was very similar to that of IE. This made them the best performers in the HTML loading test. Opera was the second fastest in the iBench HTML loading test as it rendered all the pages using its own engine (the other browsers were based on either the Netscape or the IE browser engine, which was the fastest). K-Meleon took the maximum time to complete the full test.

K-Meleon also failed to load Caffeine Mark's Java applet, making it impossible to test the Java performance of this browser. The Internet Explorer based browsers such as NetCaptor and MSN Explorer fared quite well in this test as well.

## CONCLUSION

Among the Internet communications suites, had the competition been between IE 6 and Netscape 6, IE would have emerged the winner. However, with **Netscape 6.1**, woes of a crash-prone and slow browser have been effectively dealt with, which makes it the obvious winner in this category. Full of features, and extremely useable and customisable, Netscape 6.1 can get even better if the absurd product activation procedures were eliminated. IE still remains a good choice, but it's not the best. You have to have it because Windows has it.



Opera 5.12: a good choice for dial-up users



Netscape 6.1: a feature-rich browser

As far as function-specific browsers are concerned, simple, small and functional were the rules for this category, and **Opera** ruled the roost. Opera is the only 'complete and homogenous' browser in this category, as it comes with its own HTML rendering engine. The multiple document view has been the favourite of many, but the interface still has room for improvement. Nice bookmarks, customisability, the swiftness and the built-in download manager and pop-up box closer make it highly recommended for dial-up Internet users. NetCaptor 6.5 is also highly functional and something an IE user can easily migrate to, which makes it a great choice for everyday usage.

1/2 page H AD

HARDWARE

# Radar

ASUS P4T-M Motherboard, AMD Athlon 1.4 GHz Processor and more, all tested and brought to you

Find it on digit interactive

**More Info** on the hardware products tested. Check out **Mindware**

## Dazzle Hollywood DV- Bridge

### All set to dazzle

Hollywood DV-Bridge lets you convert your analog videos to DV format and vice-versa without losing video quality. It can be connected to a camcorder, a TV, or a VCR to capture video onto your computer. You also get Dazzle Main Actor video editing software and MGI Video Wave 4 SE along with it.



**SPECIFICATIONS:**
Minimum Requirements: Pentium II 400 MHz processor or higher, Windows 98 SE/ME/2000, 64 MB RAM, 800x600 pixel resolution, sound card, 1394 (FireWire) Port

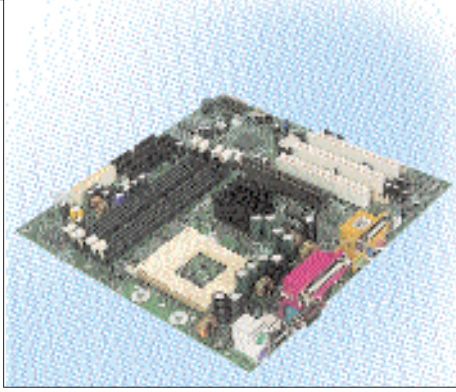
| verdict | B + |
|---|---|
| Dazzle Hollywood DV-Bridge | |
| Performance | |
| Build Quality | |
| Value for Money | |
| Features | |
| OVERALL | |

\+ Easy installation; Functional and easy-to-use software bundled along
\- Expensive
Price: Rs 26,000
Contact: Futuristik Control Networks
Phone: 080-2998902; Fax: 080-2998901
E-mail: jaj@vsnl.com
Web site: www.futuristik.net

## Asus P-4T M Motherboard

### Great performer, high price

A Socket 473 micro ATX motherboard for hosting the P4, it has a well-designed AGP interface that allows for high bandwidth between the board and the graphics card. It includes an integrated 10/100 LAN card. With its stable performance and a comparatively small form factor, it packs a lot of punch for its size, the only deterrent being its high price.



**SPECIFICATIONS:**
Socket Type: Socket 473
Features: 3 PCI Slots, 4 USB ports, 1 AGP slot, RAM upgradable to 2 GB
Benchmarks: SiSoft Sandra: drive index of 23361, 34 MBps sequential read, 7 MBps random read, 30 MBps sequential write, 8 MBps random write
Quake III Arena: 230 fps (normal), 190 fps (high quality)
44.4 Winstone units in Content Creation, 4299 in 3D Mark 200t, 76.37 seconds in the Adobe Photoshop test

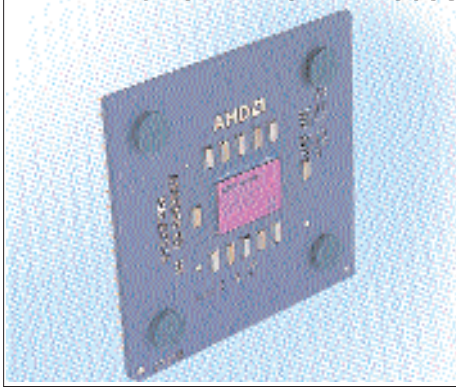
| verdict | B |
|---|---|
| ASUS P-4T M Motherboard | |
| Performance | |
| Build Quality | |
| Value for Money | |
| Ease of use | |
| OVERALL | |

\+ Four USB ports
\+ RAM upgradable to 2 GB
\- High price
Price: Rs 12,500
Contact: Rashi Peripherals
Phone: 022-8260258; Fax: 022- 8221012
E-mail: ho@rptechindia.com
Web site: www.rptechindia.com

## AMD Athlon 1.4 GHz Processor

### A formidable performer

The Athlon 1.4 GHz uses the Thunderbird core and runs on a 266 MHz system bus. It has an effective heat sink and fan–the processor didn't cross 55 degrees during the test. It displayed an impressive performance and is a good choice if you are looking for a fast system at an affordable price.




**SPECIFICATIONS:**
1.4 GHz core speed, 128 KB L1 Cache, 256 KB L2 Cache, 0.18 micron fabrication process
Benchmarks:
3D Mark 2001: 4105; SiSoft Sandra 2001 test drive index: 23590; Content Creation: 42.6 Winstone units; video encoding: 67 seconds; AudioActive encoding: 27 seconds; Quake III Arena: 185.7 fps (normal), 170.3 fps (high quality)

| verdict | B |
|---|---|
| AMD Athlon 1.4 GHz Processor | |
| Performance | |
| Build Quality | |
| Value for Money | |
| Features | |
| OVERALL | |

\+ Impressive real-world performance
\+ Affordable
Price: Rs 9,500
Contact: Zeta Technologies
Phone: 022-4102288
Fax: 022-4102277
E-mail: tejas@zetaindia.com
Web site: www.zetaindia.com

## Good looking and smooth

This innovatively designed mouse has four buttons and a Web wheel, which can easily be programmed. Running on two AA batteries, it gives precise cursor control by providing a resolution of 800 dpi. In *Quake III*, this mouse was extremely smooth to work with. However, its ergonomics and contours make it suitable only for right-handed users.

## Logitech Cordless Mouseman Optical



**SPECIFICATIONS:**
Minimum Requirements: IBM compatible PC, Windows 98/Me/2000/NT, available USB/PS/2 port, CD-ROM drive, Macintosh System, Macintosh OS 8.6 or later, CD-ROM drive

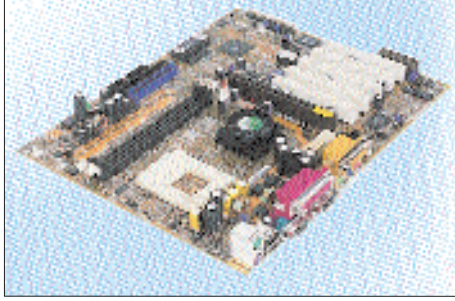
| verdict | B + |
|---|---|
| Logitech Cordless Mouseman Optical | |
| Performance | |
| Build Quality | |
| Value for Money | |
| Featues | |
| OVERALL | |

\+ Good looks; Very smooth to use
\- Not suitable for a left-handed users
Price: Rs 4,990
Contact: Rashi Peripherals
Phone: 022- 8260258; Fax: 022- 8221012
E-mail: ho@rptechindia.com
Web site: www.rptechindia.com

## Expansive and stable

This motherboard is based on the AMD 761 chipset with an ATX form factor. It supports Athlon and Duron processors ranging from 550 MHz to 1 GHz and above. With stable performance and plenty of expansion options, this motherboard is a good choice where bandwidth-heavy applications such as image editing and performance will be used.

## ASUS A7M 266 Motherboard



**SPECIFICATIONS:**
Socket Type: Socket A
Features: 4 PCI slots, 4 USB ports, DDR RAM compatible
Benchmarks:
3D Mark 2001: 4105; *Quake III*: 185.7 fps (normal mode), 170.3 fps (high quality mode); SiSoft Sandra drive index: 23590, 34 MBps sequential read, 7 MBps random read, 29 MBps sequential write, 9 MBps random write; Content Creation: 42.6

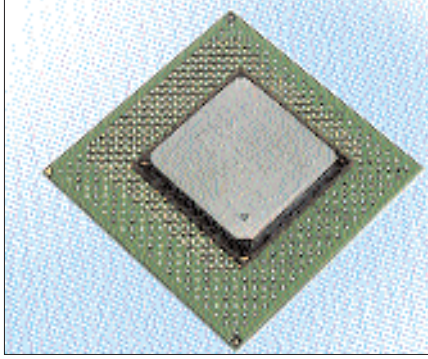
| verdict | B - |
|---|---|
| ASUS A7M Motherboard | |
| Performance | |
| Build Quality | |
| Value for Money | |
| Features | |
| OVERALL | |

\+ Four PCI slots
\+ DDR RAM upgradeable to 2 GB
\- Expensive
Price: Rs 12,900
Contact: Zeta Technologies
Phone: 022-4102288; Fax: 022-4102277
E-mail: tejas@zetaindia.com
Web site: www.zetaindia.com

## Power processor

The P4 1.8 GHz processor is the fastest processor currently available in India. It comes with the heat sink-fan combo, clips, holders and thermal conducting paste. The performance was above average in almost all the tests. With an impressive performance in multimedia applications such as audio and video encoding, this processor is a good choice for power-consuming applications.

## Pentium 4 1.8 GHz Processor



**SPECIFICATIONS:**
Benchmarks: Content Creation: 44.4; 3D Mark 2001: 4299; SiSoft HDD index: 23361, 34 MBps sequential read, 7 MBps random read; Audio encoding: 28 seconds; Video encoding: 57 seconds; Photoshop: 76.37 seconds, *Quake III Arena*: 230 fps (normal mode) 190 fps (high quality)

| verdict | B + |
|---|---|
| Pentium 4 1.8 GHz Processor | |
| Performance | |
| Build Quality | |
| Value for Money | |
| Features | |
| OVERALL | |

\+ Very good performance in multimedia and gaming applications
\- Motherboards for this processor are still expensive
Price: Rs 11,868
Contact: Intel Asia Electronics
Phone: 080-5550940; Fax: 080-5550943
Web site: www.intel.com

## Hear and now

This headset with microphone supports the NCAT-2 Noise Cancellation Technology, suitable for use in noisy environments. It's specifically built for usage in voice over IP applications. While playing music, the bass levels were rather nasal, while the levels of treble and mid frequencies were overpoweringly high. The sound was slightly distorted during loud scenes in movies.

## Labtec Axis-302 Headphones



**SPECIFICATIONS:**
Frequency response: Headset 20 to 20,000 Hz, microphone 100 to 16,000 Hz
Mic bias voltage: 3.0 V DC; output impendence: 680 ohms

| verdict | B - |
|---|---|
| Labtec Axis-302 Headphones | |
| Performance | |
| Build Quality | |
| Value for Money | |
| Features | |
| OVERALL | |

\+ Long cord
\+ Performs better with a good soundcard
\- Uncomfortable
Price: Rs 1,350
Contact: Rashi Peripherals
Phone: 022- 826025; Fax: 022- 8221012
E-mail: ho@rptechindia.com
Web site: www.rptechindia.com

SOFTWARE

# Radar

MGI Photo Suite III, NetIQ's MP3 Check—all the latest software out there, tested for you

Find it on digit interactive

**More Info** on the software products tested. Check out Mindware

## Magix Studio Deluxe V 2000

### Sound of magix

This music production tool for Wave files can handle up to 16 tracks and add filters such as echo, delay, reverb and FFT, and a plugin to import sound tracks. It allows resampling, time stretching, pitch shifting, normalise, etc. It can handle MIDI tracks, import files with SNG, .MID and WAV file extensions and can also work with AVI files.



**SPECIFICATIONS:**
Features: Can add extra effects and enhancements such as simulating bigger rooms, only reverb and chorus effects can be added to MIDI tracks, supports drag-and-drop functionality

| verdict | B |
|---|---|
| Magix Studio Deluxe V 2000 | |
| Ease of use | |
| Features | |
| Performance | |
| Value for money | |
| OVERALL | |

\+ Easy to use
\- Can't import MP3s
Price: Rs 850
Contact: Microware Computer Services
Phone: 022-8729725
Fax: 022-8727446
E-mail: vinod@mwcdrom.com
Web site: www.mwcdrom.com

## MGI Photo Suite III (Family Edition)

### Photo editing made easy

Using this software, you can organise and enhance your photographs by adding some spectacular effects. Apart from the usual cropping and rotating of photographs, it has tools such as the clone tool, the predefined set of Filter effects, a basic set of drawing tools and others. It can acquire images from a digital camera or scanner.




**SPECIFICATIONS:**
Features: Preset warp styles let you create interesting effects to images, can add cool effects such as fog, snow, wind and others, and eliminate speckles from scanned images

| verdict | B |
|---|---|
| MGI Photo Suite III (Family Edition) | |
| Ease of use | |
| Features | |
| Performance | |
| Value for money | |
| OVERALL | |

\+ Easy-to-use features and intuitive layout; Affordable
\- Limited functionality
Price: Rs 900
Contact: Microware Computer Services
Phone: 022-8729725; Fax: 022-8727446
E-mail: vinod@mwcdrom.com
Web site: www.mwcdrom.com

## CoffeeCup Free Viewer

### A view with coffee

It supports viewing for 10 different image formats. There are bare image editing features such as negative conversion of an image and enhancement of colours. You can e-mail an image, upload images to an FTP server on the Internet or network, or use e-mail zip to compress images to be sent via e-mail.



**SPECIFICATIONS**
Features: 10 image formats can be viewed, but conversion is possible in only five formats

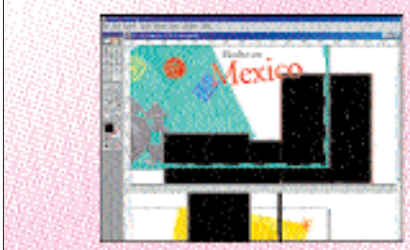
| verdict | B |
|---|---|
| CoffeeCup Free Viewer | |
| Ease of use | |
| Features | |
| Performance | |
| Value for money | |
| OVERALL | |

\+ Integrated tools such as mail and FTP client for sending images on the Internet
\- Cannot write to all image formats
Price: Freeware
Web site: www.coffeecup.com

## Designerware

Offers tight control of embedded objects, nested text and graphics frames. Customise your work area with editable keyboard shortcuts, dockable palettes, and so on. For long document compositions, use rich character and paragraph styles for specifying or updating text styles across documents. It supports a wide range of output devices and formats.

# Adobe InDesign 1.5




**SPECIFICATIONS:**
Features: Built-in trapping; solid text wrap options; standard Pen, Pencil, Smooth, Eraser, Free Transform; built-in support for Adobe PDF files; ability to align text to any path and then manipulate it; comprehensive printing controls with support for built-in trapping and Adobe in-RIP trapping; can convert QuarkXPress 3.3-4.1 and PageMaker 6.5 documents

| verdict | B + |
|---|---|
| Adobe InDesign 1.5 | |
| Ease of use | |
| Features | |
| Performance | |
| Value for Money | |
| OVERALL | |

\+ Powerful page layout features and integration with other Adobe products
\- Expensive
Price: Rs 42,946
Contact: Adobe Systems India Pvt Ltd
Phone: 0118-4531967; Fax: 0118-4532010
E-mail: sandeepm@adobe.com
Web site: www.adobe.com

## Video enthusiasts ahoy!

Open any video file and add a wide variety of effects to it. You can add titles or voice messages to the video, besides recording background music from an audio CD or an MP3 file. You can also send the finished video as an e-mail, a greeting card or set it as a Web page.

# ULead Video Studio 4.0




**SPECIFICATIONS:**
Features: Software CD comes with DirectX, QuickTime, additional videos, sounds and pictures; wide range of project templates

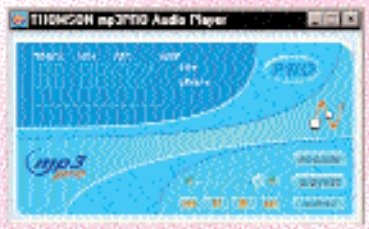
| verdict | B + |
|---|---|
| ULead Video Studio 4.0 | |
| Ease of use | |
| Features | |
| Performance | |
| Value for Money | |
| OVERALL | |

\+ Very powerful image editing features
\+ Highly intuitive interface
Price: Rs 2,250
Contact: Microware Computer Services
Phone: 022-8729725
Fax: 022-8727446
E-mail: vinod@mwcdrom.com
Web site: www.mwcdrom.com

## Music to your ears

This player has only the bare bones features–the player, a small encoder interface and a simple playlist manager. This software lets you encode standard WAV files into 64 Kbps 44.1 KHz stereo MP3Pro audio files while still maintaining CD-quality audio. Encoding at a higher bitrate requires that you buy a full retail version of the software.

# Thomson MP3Pro audio player



**SPECIFICATIONS:**
Download size: 2.5 MB
Features: No audio equalisation; doesn't let you rip audio directly off the CD and encode into MP3Pro files, the 2.5 MB download lets you encode standard WAV files into 64 Kbps 44.1 KHz stereo MP3Pro audio files while still maintaining CD-quality audio; need to buy the full retail version to encode at higher bitrate

| verdict | B + |
|---|---|
| Thomson MP3Pro audio player | |
| Ease of use | |
| Features | |
| Performance | |
| Value for Money | |
| OVERALL | |

\+ Free, backward compatible
\- No greater than 64 Kbps or batch encoding
Price: Freeware
Web site: www.rca.com

## Music resource finder

This software scans your network's shared resources to find how much of it is used to store music files. You can choose to scan only a certain workgroup/domain, only selected machines, or manually add the whole of the network to the scan list. It can even scan any hidden shares that exist on the network.

# NetIQ MP3Check




**SPECIFICATIONS:**
Features: Scans many computers simultaneously, scans even hidden shares, can figure out how much of a network's shared resources are being used to store MP3s

| verdict | A - |
|---|---|
| NetIQ MP3Check | |
| Ease of use | |
| Features | |
| Performance | |
| Value for Money | |
| OVERALL | |

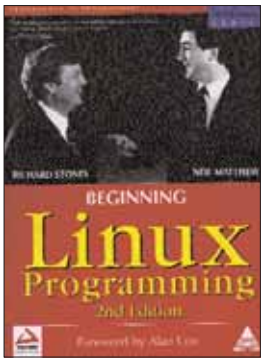
\+ Scans in multiple threads and hidden shares, faster than other equivalent programs
\- Needs to be run a few times before a stable result is obtained
Price: Freeware
Web site: www.netiq.com

# Reviews

## Beginning Linux Programming

### The first step

This book addresses the oft pondered question, "What development can I do in Linux?" The book expects you to have knowledge of C and concentrates on development using C. Advanced topics such as interprocess communications, device drivers and POSIX have also been dealt with considerably well. Overall, a very good book to start off with if you are interested in system programming.

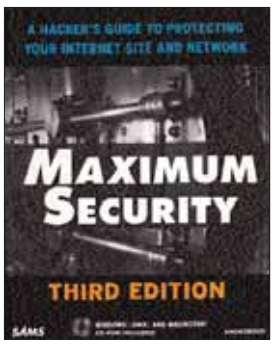



Publisher: Shroff Publishers & Distributors
Contact: Shroff Publishers & Distributors
Phone: 022-2631572, 2641488
Fax: 022-262 3551
E-mail: spd@vsnl.com
Price: Rs 575
Rating: ▲▲▲△△

## Maximum Security

### Go with the experts!

This book is aimed at system administrators and managers who need protection from hackers for their computers, networks and Web sites. The best feature of this book is that it is written by security professionals and experienced hackers. The book delves into various interesting topics such as Firewalls, password crackers, platforms and security and a whole lot more.




Publisher: Sams Publishing
Contact: Computer Book Shop
Phone: 022-2070989, 2076356
Fax: 022-262 3551
E-mail: cbsbom@gias-bm01.vsnl.net.in
Price: Rs 2,489.50
Rating: ▲▲▲△△

## Comdex Computer Course Kit

### First base

If you are an absolute newbie to the world of computers then this book should provide for a valuable introduction. The book calls for no previous knowledge of computers and introduces you to the very basics of computing, right from the components of a PC to working in Excel 2000. It includes an audio/video software on an accompanying CD, which further explains all that you read in the book.




Publisher: Dream Tech Press
Contact: IDG Books India Pvt Ltd
Phone: 011-3260877, 3270877
Fax: 011-3275895
E-mail: idgbooks@vsnl.com, hungryminds@vsnl.com
Price: Rs 199
Rating: ▲▲▲△△

Find it on digit interactive

**Arena**

For game reviews check out,
**Playware**

## On the Stands

### Awesome Game Creation

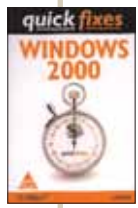
Learn how to develop your own games using software such as The Games Factory and The Pie 3D Game Creation System, and a lot more.



Publisher: Charles River Media
Contact: Computer Book Shop
Phone: 022-2070989, 2076356
Fax: 022-262 3551
E-mail: cbsbom@giasbm01.vsnl.net.in
Price: Rs 2,487.51
Rating: ▲▲▲△△

### Quick fixes Windows 2000

This book has the answers to any and every problem plaguing Windows 2000. It covers topics such as setting up a dual boot system, restoring the registry from a backup, setting up SSL for security on a Web site and more.




Publisher: O'Reilly and associates
Contact: Shroff Publishers & Distributors
Phone: 022-2631572, 2641488
Fax: 022-262 3551
E-mail: spd@vsnl.com
Price: Rs 225
Rating: ▲▲▲△△

### Windows Me Annoyances

This book guides you on topics such as tweaking the interface, working with the registry, etc to get the best out of Win Me. Ideal for intermediate and advanced users.




Publisher: O'Reilly and associates
Contact: Shroff Publishers & Distributors
Phone: 022-2631572, 2641488
Fax: 022-262 3551
E-mail: spd@vsnl.com
Price: Rs 275
Rating: ▲▲▲△△

UNDERCOVER

# Operation PC Cabinet

Agent 001 is out on the field once again, this time on the trail of the usually neglected but all-important PC cabinet

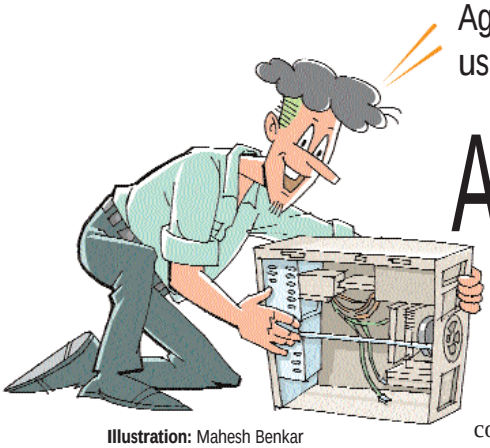


**Illustration:** Mahesh Benkar

Another month, another operation. This time I was hard on the trail of PC cabinets—much ignored, but something your system cannot do without. Some of you might drool over them, but most think it does not make a farthing of a difference. The primary criterion for most computer buyers in India while selecting a cabinet is that it should not add to the cost of the system in any significant manner.

Strangely enough, in India, PC cabinets come equipped with power supply—Switch Mode Power Supply (SMPS). But although that's how the market offers them, manufacturers generally ship them separately. So while buying a cabinet if you feel it has an underpowered power supply, you can get it changed.

I set 'Operation PC Cabinet' into motion at Goregaon, at a large cabinet dealer's showroom. According to him, cabinets from Mercury were popular and cheap. You could buy a cabinet for the smaller Baby AT motherboards that uses the older power supply system for less than Rs 800. He added that lately there was a distinct move towards ATX and Micro-ATX cabinets, which could be bought for as low as Rs 1,400. ATX cabinets are available in a variety of colours and shapes and depending on the power supply used, the cost can go as high as Rs 4,000. Most of his sales came from assemblers. On the rare occasions that users approached him directly, they argued over relatively less important details like colour, and never over power supply.

The most discerning buyers, he said, were people building servers or other high-end computers who came with specific models and power supply ratings.

Next, I shifted base to some shops in Andheri. At one I asked for a cabinet with a power supply that would support an AMD processor, which is recommended to be fitted only with a 300-watt power supply. The dealer did not know of any such special power supply. All his cabinets were equipped with a power supply of 235 watt. He quickly added that he had not heard of any complaints from customers in this regard.

I moved on to a shop that sold only P4-based systems. P4 systems use cases with a different type of power supply and are rather expensive, ranging from Rs 2,500 to Rs 3,500, but this was more than made up for by their build quality. The dealer told me that Mercury had some really inexpensive cabinets for Pentium 4 that complied with all the new ATX regulations and retailed for under Rs 2,500.

My final destination for this mission was Lamington Road, Mumbai's 'Destination Hardware'. I asked the dealer in one of the shops here whether he could find me a case with a 400-watt power supply. I amazed to hear him say: "Pick any cabinet and we will fit it with a power supply that will match your requirements". According to him, Indian power supplies were nothing to scoff at and supplied clean and pure voltages as compared to some of the cheaper types coming in from Taiwan and elsewhere. He also recommended the KOB series of cabinets from Mercury, saying they were probably the best when it came to affordable cabinets, especially the KOB31. This model, with a semi-transparent front facia (a first here) was sold for about Rs 1,550. The fit and finish of the KOB series, he claimed, was top quality and the power supply too was rated at a decent 250 watt—sufficient for most computer systems.

Another dealer offered me an irresistible option—he could modify any cabinet of my choice. He had photographs of several modified cabinets—cabinets with gaping holes covered by fibre glass shields, extra large fans and neon lights glowing inside, and so on. He said a modification could cost a customer anywhere between Rs 2,000 and Rs 3,000 extra, depending on his requirements.

Well, mission accomplished. My next call is to jazz up my boring old beige cabinet.

There is a distinct move towards ATX and Micro-ATX cabinets, which can be bought for as little as Rs 1,400

## Pentium 4 Cabinets

Intel has changed the power supply ratings for the P4 motherboards. The power supply now needs to conform to ATX 2.03 specifications. This means that most cheap cabinets using locally manufactured power supplies will not work with them. This also implies that cabinets as well as power supplies for the P4 are now imported and also cost almost double the amount that we have been used to paying. These cabinets are superior in build quality (curled edges) and the quality of the power supply used. They also offer more bays and sometimes even knurled knobs instead of screws for fastening the panels of the cabinet, which makes it possible to access the insides of your system even if you do not have a screwdriver handy. Cabinets from IN-WIN have been particularly popular for P4 systems, but are costly.

*Want to share insights and experiences in buying computer hardware and digital products?*
*Write in to readersletters@jasubhai.com*

# A-List

## A listing of the best products in different hardware and software categories

Who's in, who's out? The competition's hot, but only the winners get to this page—a listing of the best performing hardware and software that have been tested till date in different categories.

Every month, at the Digital Media Test & Research Centre, we carry out a series of comparison tests as well as individual product reviews. Based on these tests, the best products have been listed here (*detailed reviews in Digit-Interactive Mindware*). As different products get reviewed over the months, the top products might find themselves slipping out of the charts and replaced by the latest entrants in the market. So, keep your ears sharp and eyes open and keep yourself abreast of the latest cool products.

### HARDWARE

#### Monitors (14 & 15-inch)

**Viewsonic E53**



+ OSD support
+ No message signal if power cut off
**Contact:** Roop Technologies
**Phone:** 022-6631921/2/3/4
**Fax:** 022-6103919
**Price:** Rs 7,750

#### Monitors (17-inch)

**ViewSonic PS775**

+ Very good image quality
+ Support for high resolution
**Contact:** Roop Electronics
**Phone:** 022-6175213
+ 110 MHz video bandwidth
+ Good build quality
**Fax:** 022-6103919
**Price:** Rs 24,000

#### Monitors (19 & 21-inch)

**Samsung 955DF**

+ Good build quality
+ Good colour results
– Screen clarity test fades out on corners
**Contact:** Samsung Electronics India Information & Telecommunication Ltd.
**Phone:** 011-6322517/8/9
**Fax:** 011-6932607
**Price:** Rs 31,650

#### Graphics card

**ASUS V8200 GeForce3 Deluxe**

+ Unsurpassed video quality and speed
– Needs a fast CPU to get maximum result
**Contact:** Mnemonic Systems
**Phone:** 022-8010871
**Fax:** 022-8051761
**Price:** Rs. 34,450



#### Speakers

**Creative SoundWorks DTT2500**

+ True Dolby Digital-compliant sound
– Too clumsy stand for speakers
**Contact**: Compuage Infocom
**Phone:** 022-4913986
**Fax:** 022-4919069
**Price:** Rs 24,000



#### Soundcards

**SoundBlaster Live! Platinum 5.1**

+ Dolby Digital AC-3 compliant
+ High quality sound processing
**Contact:** Compuage Infocom
**Phone:** 022-4913986
**Fax:** 022-4919069
**Price:** Rs 12,500

#### Motherboards

**ASUS P4T**

+ Fits into any ATX cabinet
+ Good feature list
**Contact:** Rashi Peripherals
**Phone:** 022-8260258
**Fax:** 022-8221012
**Price:** Rs 15,500

#### Processors

**Pentium 4 - 1.8 GHz**




+ Excellent performance.
+ Good packaging
**Contact:** Intel Asia Electronics India Pvt. Ltd.
**Phone:** 080-5550940
**Fax:** 080-5550943
**Price:** Rs 26,668

#### Hard disks (IDE)

**IBM Deskstar 75GXP DTLA-307075 - 75GB**

+ 10,000 RPM; good data transfer
+ 1 MB buffer
**Contact:** Wales Technologies
**Phone:** 022-3828100
**Fax:** 022-3828200
**Price:** Rs 17,700

#### CD drives

**ASUS CD-S500**

+ Good performance
– Slightly inferior build quality
**Contact:** Rashi Peripherals
**Phone:** 022-8260258
**Fax:** 022-8221012
**Price:** Rs 2,900

#### CD-RW drives

**Plextor PX-W1610TA**

+ High write and rewrite speed
**Contact:** Zeta Technologies
**Phone:** 022-4102277
**Fax:** 022-4102288
**Price:** Rs 13,950

#### DVD drives

**Aopen 1640 Pro DVD**

+ 16x DVD speeds; 512 KB cache
+ Good build quality
– Does not support DMA
**Contact:** Yogi Comp
**Phone:** 022-8806582
**Fax:** 022-8806582
**Price:** Rs 5,950



#### Laser Printers

**Lexmark Optra M412**

+ Good print speeds
– LCD management screen

**Contact:** T.V.S. Electronics
**Phone:** 044-2325506
**Fax:** 044-2327577
**Price:** Rs 42,000

Inkjet Printers
### Epson Stylus Color 880
+ Very quiet; good results
+ Print resolution of 2880 dpi
**Contact:** Epson India
**Phone:** 022-8257286
**Fax:** 022-8267287
**Price:** Rs 18,200

PCs
### Dell Dimension 8100
+ nVidia Geforce3 at work



+ Good built quality and well designed cabinet
**Contact:** Dell Computers
**Phone:** 1600338044 Toll free
**Phone:** 1600338046 Toll Free (Product Specific)
**Price:** Rs. 98,134/- (varies according to configuration)

Scanners
### Epson Perfection 1640SU
+ Transparency unit included as standard accessory
+ Fast image scanning
– Too bulky (4.5 kgs)
**Contact:** Epson India
**Phone:** 080-5321266
**Fax:** 080-5581799
**Price:** Rs 22,500

Laptops
### Nishubuki 1 GHz
+ Attractively priced
- Low end graphics card
Contact: Nishubuki Computer



Systems
Phone: 022-5825965
Fax: 022-5379719
Price: Rs 1,19,000

External Storage Devices
### IOMEGA 2GB Jaz
+ Very good price per MB; hard-disk-class performance
**Contact:** Neoteric Infomatique
**Phone:** 022-4172600
**Fax:** 022-4163679
**Price:** Rs 17,000

Handhelds
### Compaq iPAQ H3630
+ Very feature packed
+ Powerful processor, multimedia capable
**Contact:** RADZ Technologies
**Phone:** 022-3678293/3678297
**Fax:** 022-3678193
**Price:** Rs 43,875

MP3 players
### Creative NOMAD 2MG



+ Excellent build quality
+ Supports WMA format and upgradeable firmware
- Controls not easily accessible
Contact: Compuage Infocom
Phone: 022-4913986
Fax: 022-4919069
Price: Rs 21,500

Digital cameras
### Sony Cybershot DSC-P1



+ Good features
- Limited memory
Contact: Best International
Phone: 022-2611050
Fax: 022-2624795
Email: bestint@vsnl.com
Price: Rs 49,990

Keyboards
### Logitech Cordless Freedom Navigator
+ Very comfortable
+ Extensive configuration options
**Contact:** Rashi Peripherals
**Phone:** 022-8260258
**Fax:** 022-8190766
**Price:** Rs 7,750

Pointing devices
### Logitech Cordless Mouseman Wheel
+ Good accuracy with features; resilient to dirt
+ Many extra function keys
**Contact:** Rashi Peripherals
**Phone:** 022-8260258
**Fax:** 022-8190766
**Price:** Rs. 4,500

## SOFTWARE

Operating systems (Windows)
### Windows 2000 Professional
+ Very stable
– Heavy on system requirements
**Contact:** Integrated Business Solutions
**Phone:** 022-8214701
**Fax:** 022-8328240
**Price:** Rs 8,400

Office suites
### Microsoft Office XP
+ Rich features
– Expensive
**Contact:** Microsoft (India)
**Phone:** 011-6294600
**Price:** Rs 19,250

OCR Packages
### FineReader Pro 5.0
+ Quite accurate
**Contact:** Vikmans Multimedia
**Phone:** 011-6472325
**Price:** Rs 5,000

Operating systems (Linux)
### SuSE Linux 7.2
+ Simple to install
+ Many bundled applications

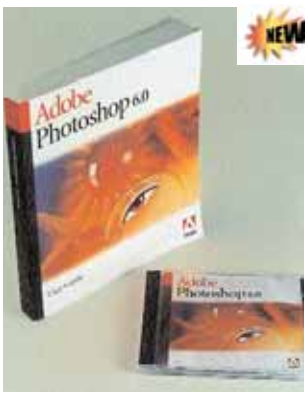



+ Customisable interface
Contact: G. T. Enterprises
Phone: 080-6606093
Fax: 080-6671407
Price: Rs 3,000

Web authoring
### Macromedia Dreamweaver4 ver.4.0
+ Extensive feature support
+ Integrates with other packages
- Intimidating for first time user
**Contact:** Wipro Infotech Enterprise
**Phone:** 080-8440011
**Fax:** 080-8440187
**Price:** Rs 14,250

Firewalls
### ZoneAlarm Pro 2.6
+ Good performance
– No protection against ActiveX controls
**Contact:** www.zonelabs.com
**Price:** Rs 2,000 (approx)

Image Editing software
### Adobe Photoshop 6.01




+ Inclusion of vector shapes
+ Layers can be grouped and coloured for easier identification of images
- Too resource hungry
**Contact:** Adobe Systems India
**Phone:** 0118-4532026
**Fax:** 0118-4532010
**Price:** Rs. 39,456

Voice recognition
### Dragon NaturallySpeaking v5.0 (Preferred Edition)
+ Impressive speech recognition
– High on system requirements
**Contact:** HCL Infosystems
**Phone:** 011-4526518
**Fax:** 011-4526579
**Price:** Rs 17,995

# Crash Course

This time the Digit Diary takes you through crashes—avoidable car crashes and, thanks to Nimda, unavoidable PC crashes

Four to five comparison tests every month, which means on an average, testing some 60 products, plus the standalone tests for new hardware and software products…and that's only for Digit. On any given day, the Digital Media Research and Test Centre looks like a hardware shack with gadgets and techies lined up all over the place, talking in nothing else but gobbledegeek. At least that's what it sounds like to lesser mortals, more technology, less English.

At the end of one such day, with the usual quota of benchmarking products and solving sundry technology-related problems for readers and colleagues alike, Hatim Kantawalla, our deputy head of the Test Centre, was driving back home. Having spent the previous night in the office to put the final touches on the Digit Smart Buyer's guide, he was feeling somewhat less than his usual exuberant self.

While waiting for a signal to turn green, Hatim was mulling over all the things that needed to be done the next day. Thus preoccupied, he momentarily relaxed his foot on the brake pedal. Disaster, which usually doesn't need more than a minute to strike, promptly did.

The car slid forward and clipped the rear of a Sumo in front. Ironically this was the office Sumo, which was loaded with people who travel from our office in Nerul to Bandra/Andheri every day.

The champ at games, with reflexes honed by years of Quake, quickly applied the brakes and shifted into reverse. As luck would have it, he had an auto driver waiting behind him with other plans. The auto driver thought the signal had turned green and raced ahead. The result: the auto and the car collided too.

Hatim, by now thoroughly confused, gave the all's well sign to his concerned colleagues in the Sumo, pulled over by the kerb, and got out to examine the damage, if any. While he was berating the auto driver, he heard a commotion with several panic-stricken voices calling out his name. He looked up and saw his car sliding forward, heading straight for a tree! In a flash Hatim, thinking of what might happen to him if he has one more accident, got in the car and averted another minor disaster.

The aftermath: A sheepish deputy head of the Test Centre, avid follower of the formula one racing circuits, was subjected to doses of sarcastic wit, much to the glee of other test centre geeks. No, he hasn't given up driving. Not yet.



**Illustration:** Mahesh Benkar

## All in a day's work

You know the rest. In the books you have read
How the British Regulars fired and fled,
How the farmers gave them ball for ball,
From behind each fence and farmyard wall,
Chasing the redcoats down the lane,
Then crossing the fields to emerge again,
Under the trees at the turn of the road,
And only pausing to fire and load.

Some of you may be familiar with this poem by H. W. Longfellow. Well, we had an experience that made this poem very relevant.

Issue closing time tends to get quite exciting at Digit every month. But sometimes there is that little 'extra'. This time people were bustling about as usual, checking layouts, proofing the stories and so on, when the peace was disturbed by a sudden commotion. It was Karan charging down the aisle shouting for everyone to not open any of the .eml files that may be present on their machine.

Why? "Because it's a virus…the Nimda virus".

This was the first warning that most of us had about the outbreak of the Nimda virus. This was naturally followed by groans (and colourful curses) from a few people who had unwittingly opened these files. Then came 'qualified advice' from the quacks around which involved applying a bunch of patches and scrambling for the latest bunch of anti virus updates.

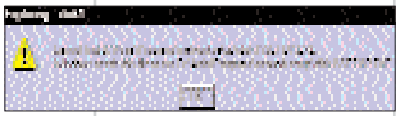
Coinciding as it did with the closing of this issue, the outbreak of the virus created its own set of complications. Nimda spreads by infecting shared folders over the network and since we frequently need to share files, you can imagine the panic this created.

But there's an old saying that nothing can get Digsters down for long. A solution was found quickly, guns reloaded, so to speak, and work was back to normal in no time at all.

# Windows did it again!

If you think we indulge in too much Windows bashing, what can we say? Can we really help it? No other OS screws up as often! Here's another example.

*Contributed by: MNA, via e-mail*



# Inky woes

Running out of printer ink can leave you in a really high and dry situation. And this online advertisement gets the point home quite accurately!




*Taken from the Net*

# On vacation

You know you need a break—and especially so when you come across a message like this.



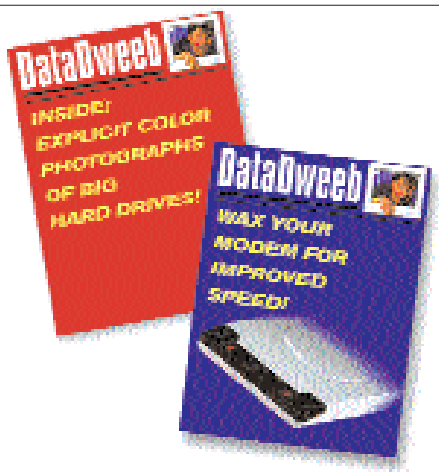

*Contributed by: Rajath Chouta, via e-mail*

## Your chance to BACKBYTE!

*Highlight the lighter side of computing. Mail your contributions to* Backbyte
Digit, Plot D-222/2,
TTC Industrial Area, MIDC,
Shirvane, Nerul,
Navi Mumbai 400 706
*or send e-mail to*
**backbyte@jasubhai.com**

# Whatever grabs you

We all have our favourites amongst the long list of glossies available on stands. The cover pages of most magazines shout out really loud about their wares, just to get the attention of the regular reader. But when it comes to getting the attention of the hardcore technology and hardware freaks, the tune seems to be quite different and keyed down.




*Taken from the Net*

## RETRO

### History of browsers

Life without Internet access? Difficult to imagine, isn't it? What started the ball rolling was the NCSA Mosaic, the first browser, developed at the National Center for Supercomputing Applications in the early 1990s. In 1993, Mosaic was the first graphical Web browser that was offered free to the public. This software program, developed by Tim Berners-Lee, brought many businessmen, educators and the government to the Internet. Its easy-to-use, point-and-click interface helped popularise the Web, although few then could imagine the explosive growth that would soon occur.

An interesting aside: 'Mesh' and 'MOI' (Mine of Information) as well as 'TIM' (The Information Mine)—these were some of the terms Berners-Lee considered before he came up with the name 'World Wide Web'.

# Readers Rants

## Blue Wait

'The blue screen of death' is a term that most computer users would be familiar with. For those of you who aren't, simply put, it means Windows is acting up. As scary as it is on your PC, the last place you'd want to see it pop up is when you've been standing outside the airport for hours on end waiting to board that flight!



*Taken from the Net*

## Look who's talking!

When you're surfing www.sgi.com and you don't find a particular page or link, you'd probably end up smiling and say "Sho shweeeet!" rather than slam your fist and go "Damn!" And why is that? Well, because of cute little tykes like this! These little guys add colour to those otherwise dreary 'page missing' messages. Makes you want to come across more such messages, doesn't it?




*Contributed by: Vidyaramanan S.*

## Time for funnies

'A good way to take some time off during a hard day's work is to check out www.netfunny.com where you'll find loads of computer funnies amongst others. And here's a sneak preview of what you could expect:




*"True Microsoft story: I once got an especially helpful reply to a question I asked on Microsoft's on-line tech support service. I wrote back to thank them for a complete and concise reply, and said how much I appreciated it.*

*The next day I had a response: "We are looking into the problem and will contact you with a solution as soon as possible."*

*Taken from the Net*